

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
A281.9
Ag83E

ERS 287

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

JUL 8 - 1966

CURRENT SERIAL RECORD

VARIABILITY OF WHEAT YIELDS IN THE GREAT PLAINS

U.S. DEPARTMENT OF AGRICULTURE / ECONOMIC RESEARCH SERVICE
in cooperation with the
Montana Agricultural Experiment Station

PREFACE

Rainfall and crop yields fluctuate widely in the Great Plains, making predictions of production difficult. In 1951, E. Lloyd Barber of the U. S. Department of Agriculture wrote a report entitled, "Variability of Wheat Yields by Counties in the United States." It contained average wheat yields and coefficients of yield variability by counties in the United States for 1926-48. The period covered years of extreme drought as well as years of bountiful rainfall.

Favorable weather in the Southern Plains since 1948, except during 1952-56, and great strides in technology have tended to improve and stabilize yields in the Great Plains. The study reported here extends Barber's study through 1962 and shows average wheat yields and yield variability for 1926-48 and 1940-62 in 9 Great Plains States. It also includes coefficients of yield trend and yield variability for the entire 1926-62 period.

The report contributes to the Great Plains regional project 8 (GP-8), "Crop Insurance in the Great Plains." Appreciation for help in assembling data on wheat yields is extended to GP-8 members in North Dakota, Nebraska, and Colorado; to Kenneth Krause in South Dakota; and to individuals in the State offices of the Statistical Reporting Service. We also thank LeRoy Rude, Lawrence A. Jones, William F. Lagrone, and Edward I. Reinsel, of the Economic Research Service, and others for their valuable collaboration.

CONTENTS

	<u>Page</u>
Introduction -----	1
Purpose of report-----	1
Explanation of statistical measures -----	1
Average yield -----	2
Coefficient of variation -----	2
Weighted average yield -----	3
Regression line and regression coefficient-----	3
Coefficient of variation about regression -----	4
Coefficient of negative variation -----	4
Limitations -----	6
Trends in wheat yields -----	7
Area variations in production risk -----	9
Tables-----	14

VARIABILITY OF WHEAT YIELDS IN THE GREAT PLAINS

By

Donald K. Larson and Layton S. Thompson^{1/}

INTRODUCTION

A large proportion of the Nation's wheat crop is raised in the Great Plains where rainfall is highly variable and unpredictable. Few crops can be produced other than cereals, which are ecologically adapted to dryland farming.

Crop yields fluctuate widely and in a disorderly way. Good or poor crop seasons may occur singly or in bunches. In some areas of the Plains, yield fluctuations are wide and frequent. In others, they are relatively narrow and infrequent. Fluctuations in production cause unstable farm incomes. The Great Plains is often referred to as a "high-risk" area. At times, farmers have difficulty meeting their farm and family expenses and paying their debts. Local businesses, particularly those tied closely to agriculture, also experience depressed periods.

PURPOSE OF REPORT

The purpose of this report is to show how wheat production varies within the Great Plains and how the variability has changed between 1926-48 and 1940-62.

The data--shown for Colorado, Kansas, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming--will be useful for estimating future yields, for appraising land values, and for economic studies in which yield uncertainty is an important consideration. Insurance companies and farm lenders may find the data helpful in making decisions concerning crop and crop-hail insurance rates and loan appraisals.

EXPLANATION OF STATISTICAL MEASURES

The statistical coefficients computed from the county yield data for each of the 9 States are shown in tables 1-18. Tables 1-9 contain average yields, coefficients of variation, and the change in average yields and yield variability between 1926-48 and 1940-62. Tables 10-18 show weighted average yields, coefficients of yield trend, and coefficients of yield variability for 1926-62.

^{1/} Mr. Larson is an Agricultural Economist in the Economic Research Service, U.S. Department of Agriculture, and Dr. Thompson is a Professor of Economics at the Montana State University, Bozeman, Mont.

The statistical coefficients are obtained by using the average annual county yields per seeded acre of all wheat. 2/

Average Yield. Average yields for 1926-48 and 1940-62, shown in tables 1-9, are obtained by summing the annual average county yields in each period and dividing by the number of years. The average is useful in comparing levels of wheat production of different counties.

Coefficient of Variation. This coefficient in tables 1-9 is obtained by expressing the standard deviation as a percentage of the average yield. 3/ It is independent of the unit of measurement used, whether pounds or bushels. For this study, the coefficient is an indicator of yield variability which is highly related to the risk of producing wheat.

A coefficient of variation of 25 percent means that in approximately two-thirds of the years, yields are within 75 to 125 percent of the average yield. For a county with an average yield of 22.0 bushels, about two-thirds of the annual yields fall between 16.5 and 27.5 bushels (fig. 1). The other one-third falls outside this range.

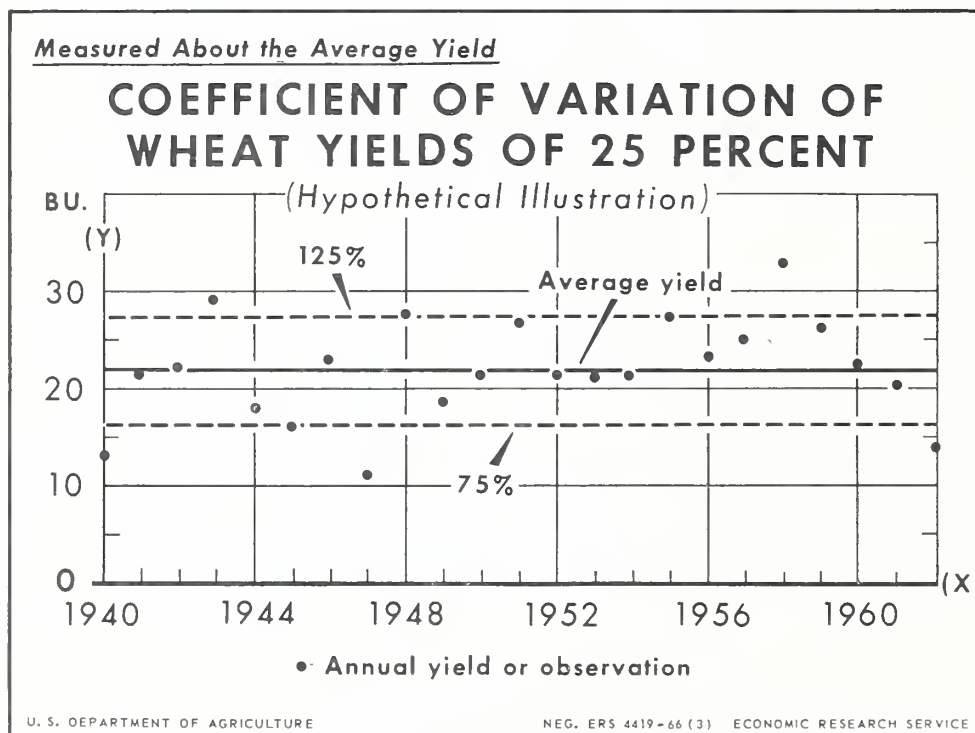


Figure 1

2/ Average yields are those estimated by the Statistical Reporting Service, U.S. Department of Agriculture. "All wheat" refers to irrigated and nonirrigated winter and spring wheat.

3/ The standard deviation represents an average of the differences between the individual observations and their average.

Weighted Average Yield. The weighted average in tables 10-18 is calculated by dividing the total wheat production by the accumulated total number of planted acres for 1926-62. Thus, the average is weighted by the planted acres of wheat. These average yields permit county-by-county comparisons for 1926-62.

Regression Line and Regression Coefficient. Linear regression analysis is used to find a line representing the central location between the observations (fig. 2). In this study, observations are the average county wheat yields per planted acre and are measured along the Y axis. The X axis represents time in years. The regression line shows the trend of wheat yields for a county from 1926 to 1962. The line is represented by the equation $Y = a + bX$. The "a" value is called the Y-intercept and represents the estimated yield for the county in 1926--the beginning of the trend line. The "b" value is the regression coefficient and shows the change in Y for each unit change in X. ^{4/}

The regression coefficient indicates the average annual rate of increase or decrease in the county yield. A regression coefficient of +0.25 indicates that yields rose during the period at an average annual rate of 0.25 bushel; a coefficient of -0.10 indicates that yields declined at an average rate of 0.10 bushel.

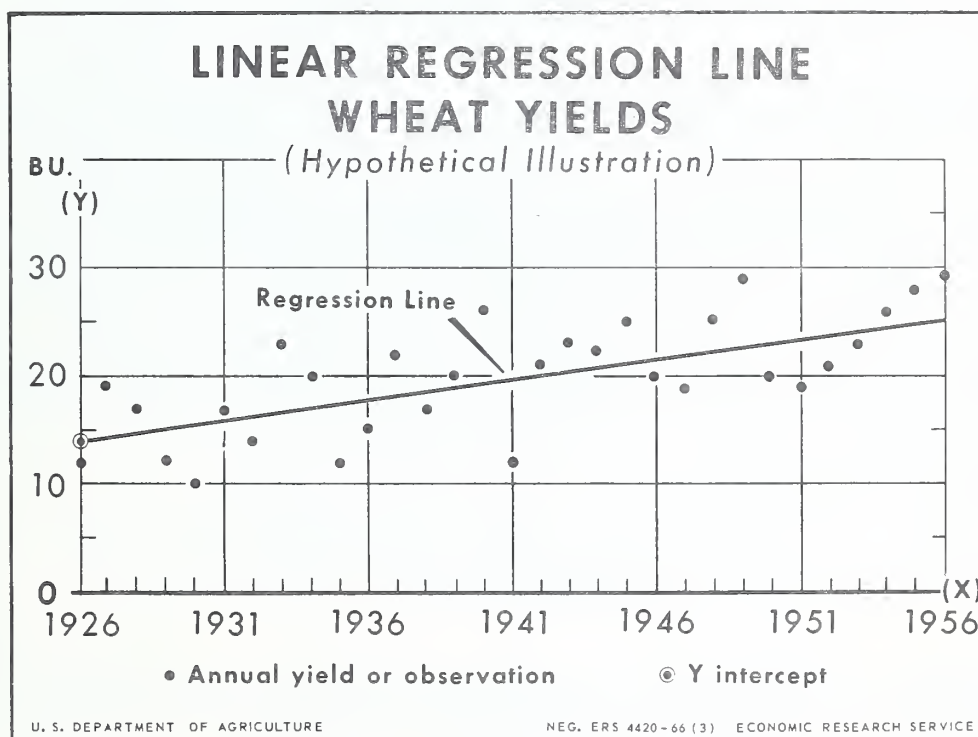


Figure 2

^{4/} Ezekiel, Mordecai, Methods of Correlation Analysis, John Wiley & Sons, Inc., N.Y., July 1956, pp. 146-150.

For Flathead County, Mont., for example, the values needed to plot the 1926-62 trend line would be as follows:

1. a (Y-intercept) = 11.04 bu.
2. b (regression coefficient) = +0.56 bu.

These figures are shown in table 10. The x value = 0 for 1926, 1 for 1927, 2 for 1928, and 36 for 1962.

The 11.04-bushel value represents the starting point of the trend line. The +0.56-bushel value indicates that the trend in yields for Flathead County increased at an average annual rate of 0.56 bushel. Substituting the values into the formula, $Y = a + bX$, the points representing the estimated annual yields can be plotted as the trend line on a graph.

A statistical method known as "least-squares" is used to calculate the b values, or regression coefficients. This method requires that: (1) The sum of the differences between the individual county annual average yields (observations) and the trend line must be zero; (2) the sum of the squared differences about the regression line must be at a minimum.^{5/}

Coefficient of Variation About Regression. The coefficients of variation (tables 10-18) represent the degree of wheat yield variability about the trend line. The coefficients are the standard deviations about the regression lines, expressed as percentages of the weighted average yields.^{6/} A coefficient of variation of 25 percent means that approximately two-thirds of the annual yields fall within 75 to 125 percent of the yield trend line (fig. 3). The other one-third falls outside these limits.

Coefficient of Negative Variation.^{7/} This coefficient, an index, measures the variation below the trend line. It is designed to indicate the risk of low wheat yields. Generally, the larger the coefficient, the lower annual yields have fallen below the trend line. A coefficient of negative variation of 25 percent means that, of the observed annual yields which fall below the trend line, approximately two-thirds would be expected to fall between the trend line and another line (line A, fig. 4) halfway between the regression line and the X axis. The other third of the yields would be expected to fall below line A.

^{5/} Steil, Robert G. D., and Torrie, James H., Principles and Procedures of Statistics, McGraw-Hill Book Company, Inc., N.Y., 1960, pp. 161-164.

^{6/} See pp. 169-170 of reference in footnote 6.

^{7/} Coefficient of negative variation below regression = 100

where: Y_j = values along regression line.

Y_i = observations below regression line.

\bar{Y}_j = weighted county average yield.

N = number of years in series, 1926-62.

$$\frac{\sqrt{\frac{\sum (Y_j - Y_i)^2}{N}}}{\bar{Y}_j}$$

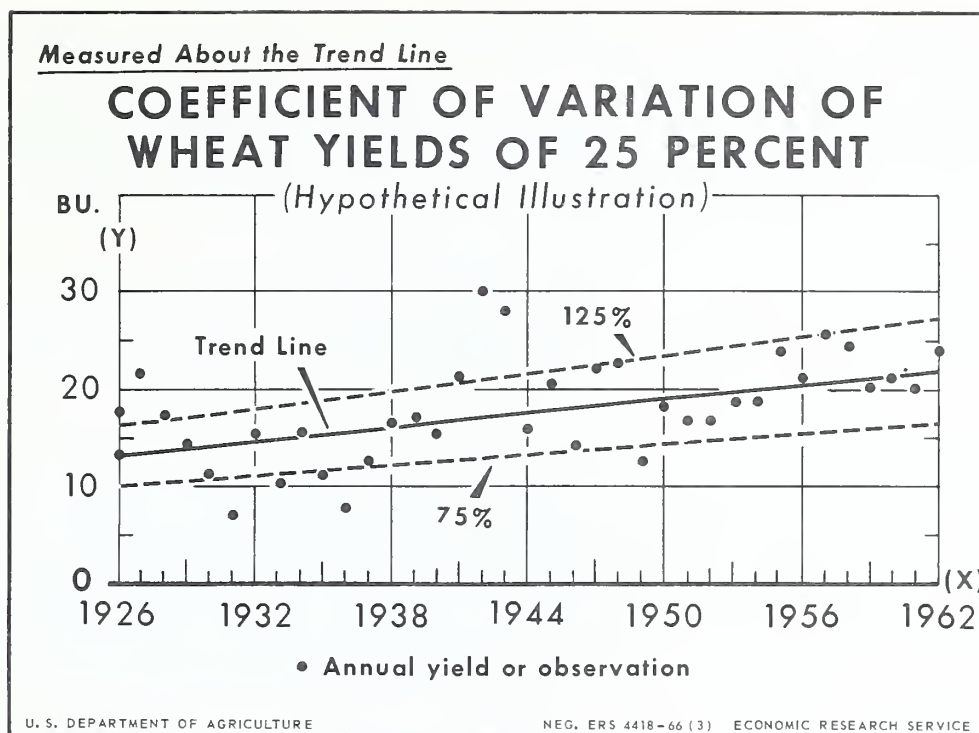


Figure 3

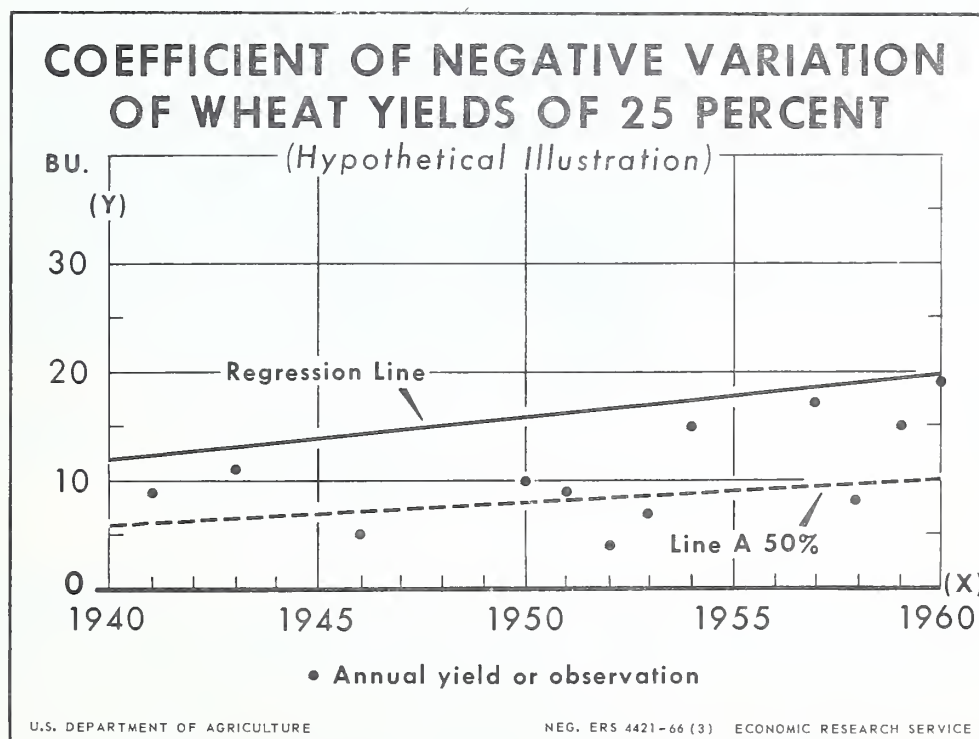


Figure 4

LIMITATIONS

Statistical coefficients in the study are based on aggregated county data, and must be tempered with additional knowledge and judgment to avoid wrong conclusions. Yields are county averages and may not reflect the variability of wheat yields for individual farms. County average yields can conceal significant relationships and provide unrealistic bases for projections.

The proportion of cropland in wheat varies widely among counties in the Great Plains, ranging from less than 1 percent to more than 70 percent. The importance of wheat in various areas is indicated in figure 5. The statistical coefficients are more significant for counties within than outside the major producing areas.

Any group of yearly wheat yields will not be precisely representative of a group in the future. Future yields and variability cannot be predicted exactly. The slope of the trend line for some counties may have resulted from unusual situations. For example, several years of crop failures at the beginning of a period, or unusually high production in the latter part of a period, or both, could cause an upward slope in the trend line that cannot be expected to continue. Trends in yields result from changes in both weather and technology; effects of each one are difficult to measure.

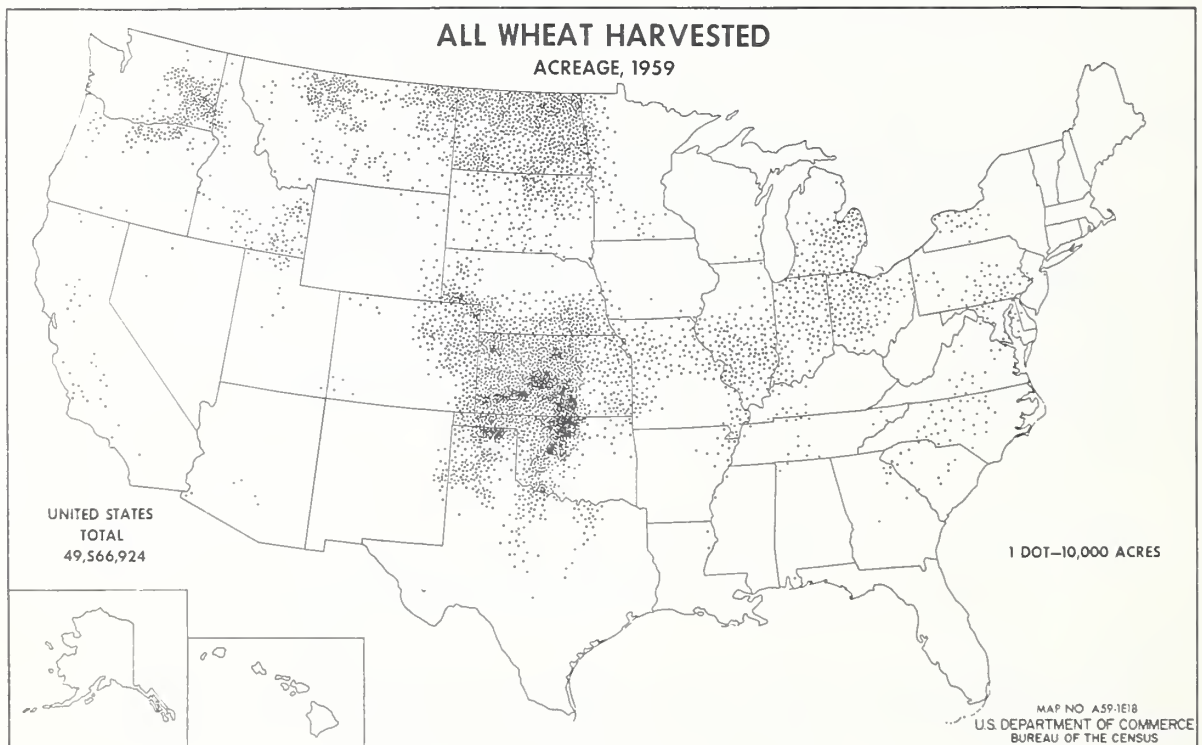


Figure 5

Coefficients of variation may best reflect relative risk when comparing counties with similar average yields or counties with symmetrical distributions of annual yields. For nonnormal distributions, coefficients of variation are not strictly comparable.^{8/} Values of the coefficients of variation and of negative variation have little direct meaning other than for comparing the relative risk among counties.

TRENDS IN WHEAT YIELDS

The national trend of wheat yields has been upward since the 1880's. The study reported here shows that the trend of wheat yields for most counties in the Great Plains also has been upward. During 1926-62, regression coefficients were positive for most of the counties.

The upward trend in yields can be partly attributed to improved technology.^{9/} Technological advances, such as improved power and equipment, better wheat varieties, fertilizers, irrigation, and improved control of insects, diseases, and weeds, have contributed to increases in wheat yields throughout the Great Plains. Improved production practices have enabled wheat farmers to partly offset the effects of unfavorable weather. Future trends, upward or downward, will be conditioned by weather and use of improved production practices.

Average wheat yields decreased in some counties in Texas, Oklahoma, Colorado, Wyoming, and South Dakota between 1926-48 and 1940-62 (fig. 6). Only 7 of 35 counties in Texas with decreasing yields, however, were in major wheat-producing areas. In the other States, only 1 of 3 counties in Oklahoma with decreasing yields, 1 of 6 in Colorado, and none of the counties with decreasing yields in South Dakota and Wyoming were major producers of wheat. Yields in the counties bordering those with decreasing yields increased only slightly during the same period.

Rainfall in much of Colorado, Oklahoma, and Texas was 20 to 45 percent below normal from 1933 through 1937, and again from 1952 through 1956.^{10/} Despite the 5-year deficiency in rainfall during 1940-62, average yields were higher in most counties in these three States than during the earlier study period. Improvements in technology accounted for much of the increase for the major wheat-producing counties. But, in counties with decreasing average yields, drought was probably severe enough to offset the effects of improved technology.

^{8/} Heady, Earl O., Kehrberg, Earl W., and Jebe, Emil H., Economic Instability and Choices Involving Income and Risk in Primary or Crop Production, Iowa Agr. Expt. Sta. Res. Bul. 404, Jan. 1954, pp. 719-721.

^{9/} The value of the regression coefficient does not measure technology, but can serve as an indicator of the effects of technology.

^{10/} Special Report on Drought, prepared under the direction of the Special Assistant to the President for Public Works Planning, October 1958, p. 7.

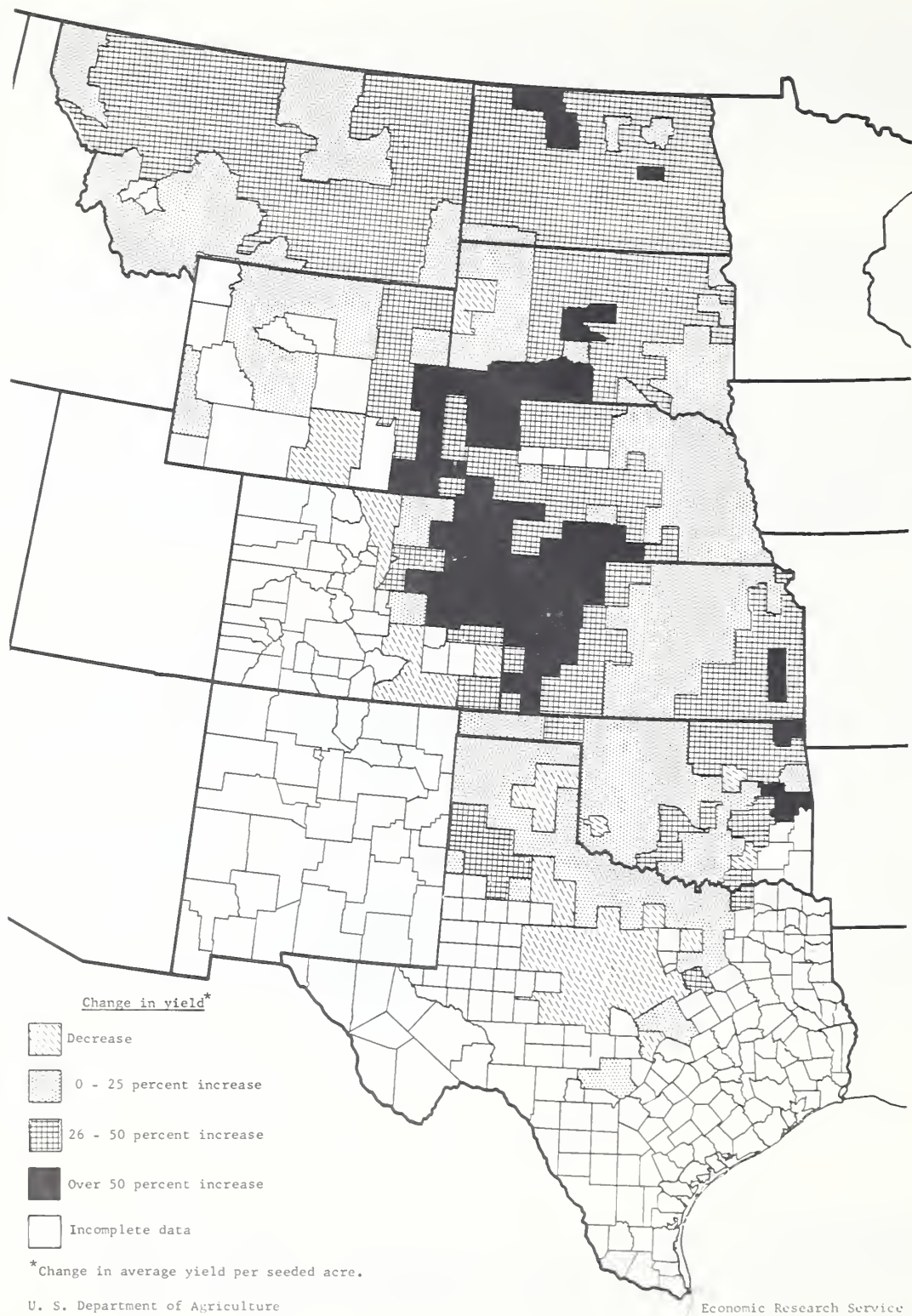


Figure 6. --Change in average wheat yields from 1926-48 to 1940-62, Great Plains

The variability of county wheat yields increased between 1926-48 and 1940-62 in important wheat areas of eastern Nebraska and Kansas and much of Oklahoma and Texas (fig. 7). Rainfall varied more in this area during 1940-62 than during 1926-48.^{11/} Variations in weather, particularly rainfall, had a greater effect on wheat yields than technology.^{12/}

Yield variability decreased in the 4 Northern Plains States--Montana, North Dakota, South Dakota, and Wyoming--due to both improved weather and technology. In western Kansas, western Nebraska, and Oklahoma Panhandle, and in most counties of eastern Colorado, an increase in wheat seeded on cultivated summer fallow and on irrigated acreage helped to make wheat yields more stable in 1940-62 than in the earlier period.

AREA VARIATIONS IN PRODUCTION RISK

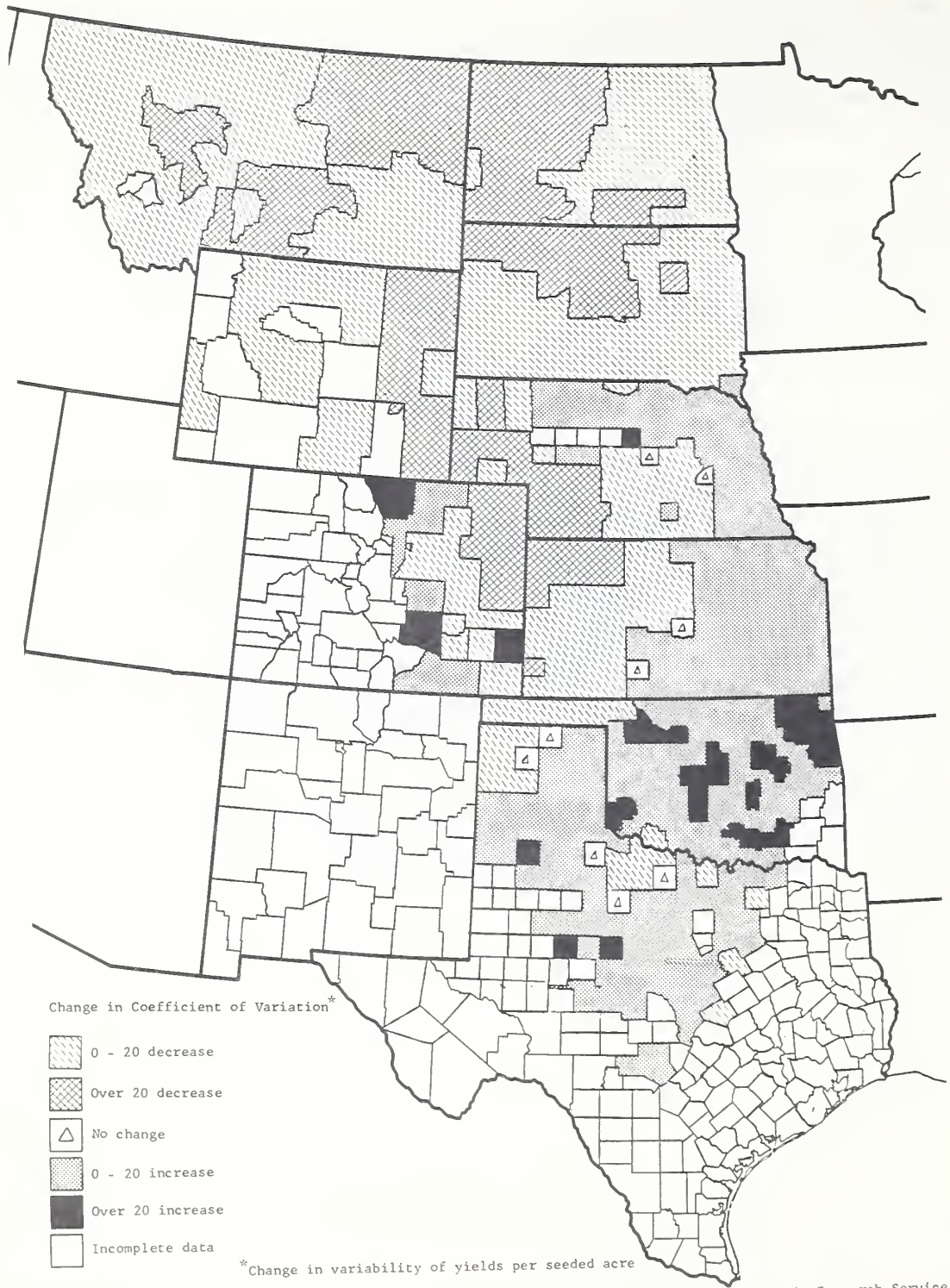
Area differences in the degree of wheat production risk (as measured by the coefficients of variation about the trend in tables 10-18) for 1926-62 are shown in figure 8. With the exception of Billings County, N. Dak., major wheat counties showing the greatest production risks (coefficients of more than 70 percent) are located in southwestern Kansas, southeastern Colorado, and the Panhandles of Oklahoma and Texas.^{13/} The next highest risk areas (coefficients of 51-70 percent) are eastern Montana, western North and South Dakota, and counties bordering the highest risk counties in Kansas, Colorado, Oklahoma, and Texas. Counties in the mountain valleys of western Montana and Wyoming, the Red River Valley, N. Dak., and northeastern Kansas have coefficients of less than 30 percent, indicating more stable yields and lower production risks.

Average yields are generally less in the high-risk than in the low-risk areas (fig. 9). The coefficients of negative variation delineate areas having about the same degree of risk as shown by the coefficients of variation (fig. 10).

^{11/} Pages 7-9 of reference in footnote 10, and analysis of annual rainfall data from several weather stations.

^{12/} Technology probably stabilizes yields.

^{13/} These areas are the same high-risk areas shown in the earlier report by E. Lloyd Barber (cited in preface), but the degree of risk decreased (fig. 7).



U. S. Department of Agriculture

Economic Research Service

Figure 7. --Change in variability of wheat yields from 1926-48 to 1940-62, Great Plains

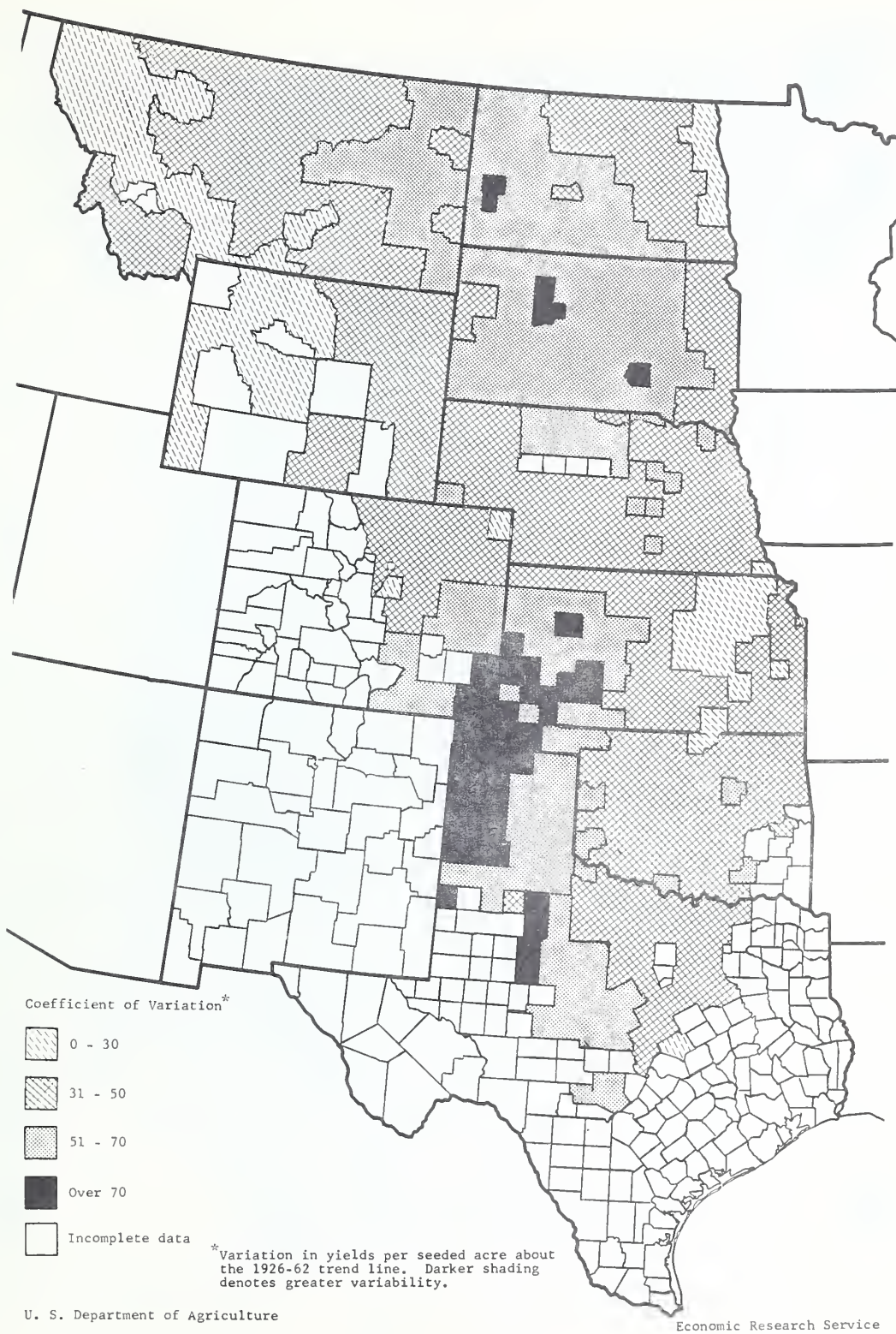


Figure 8. --Variability of wheat yields, 1926-62, Great Plains

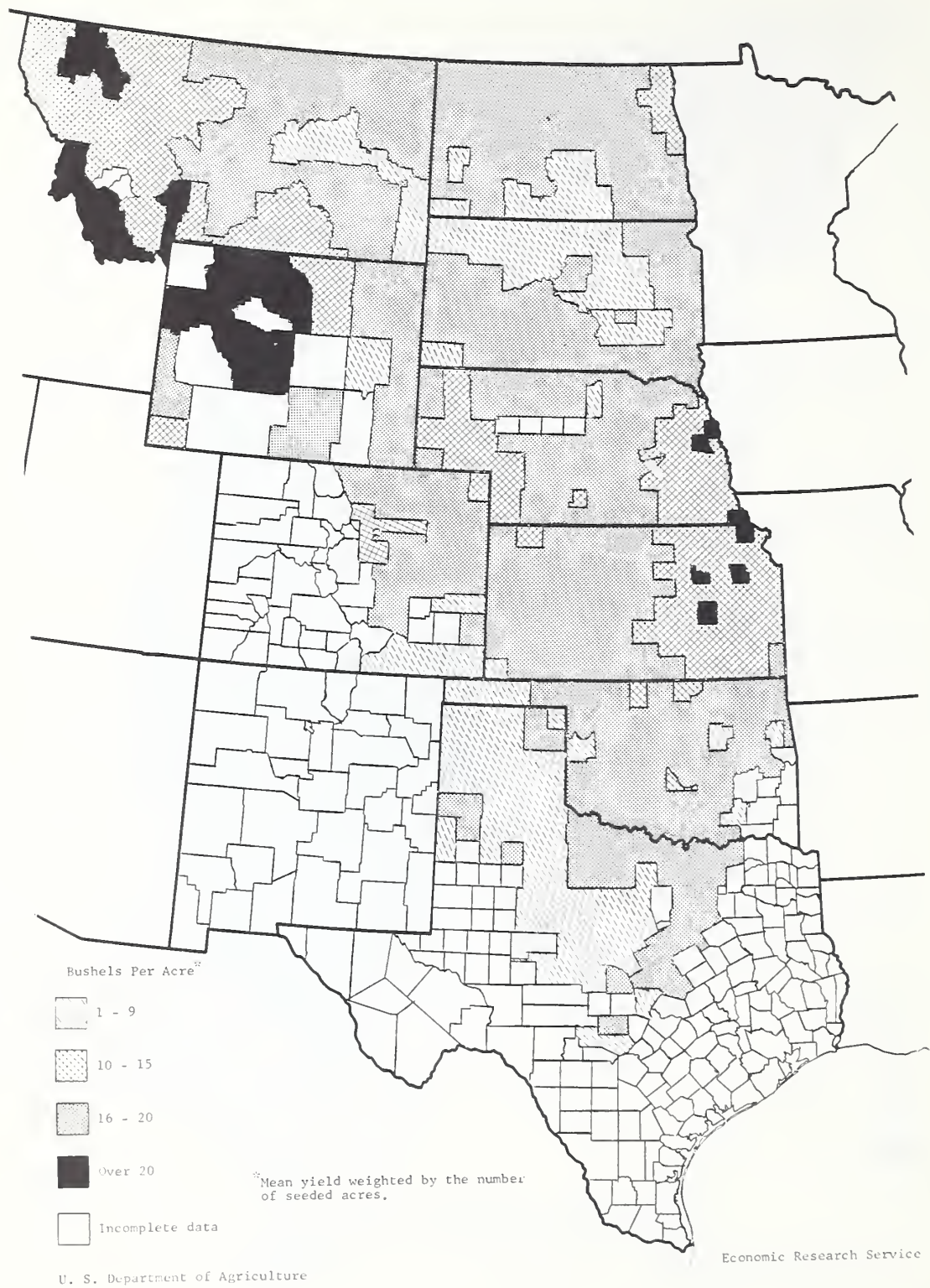


Figure 9. --Average wheat yields, 1926-62, Great Plains

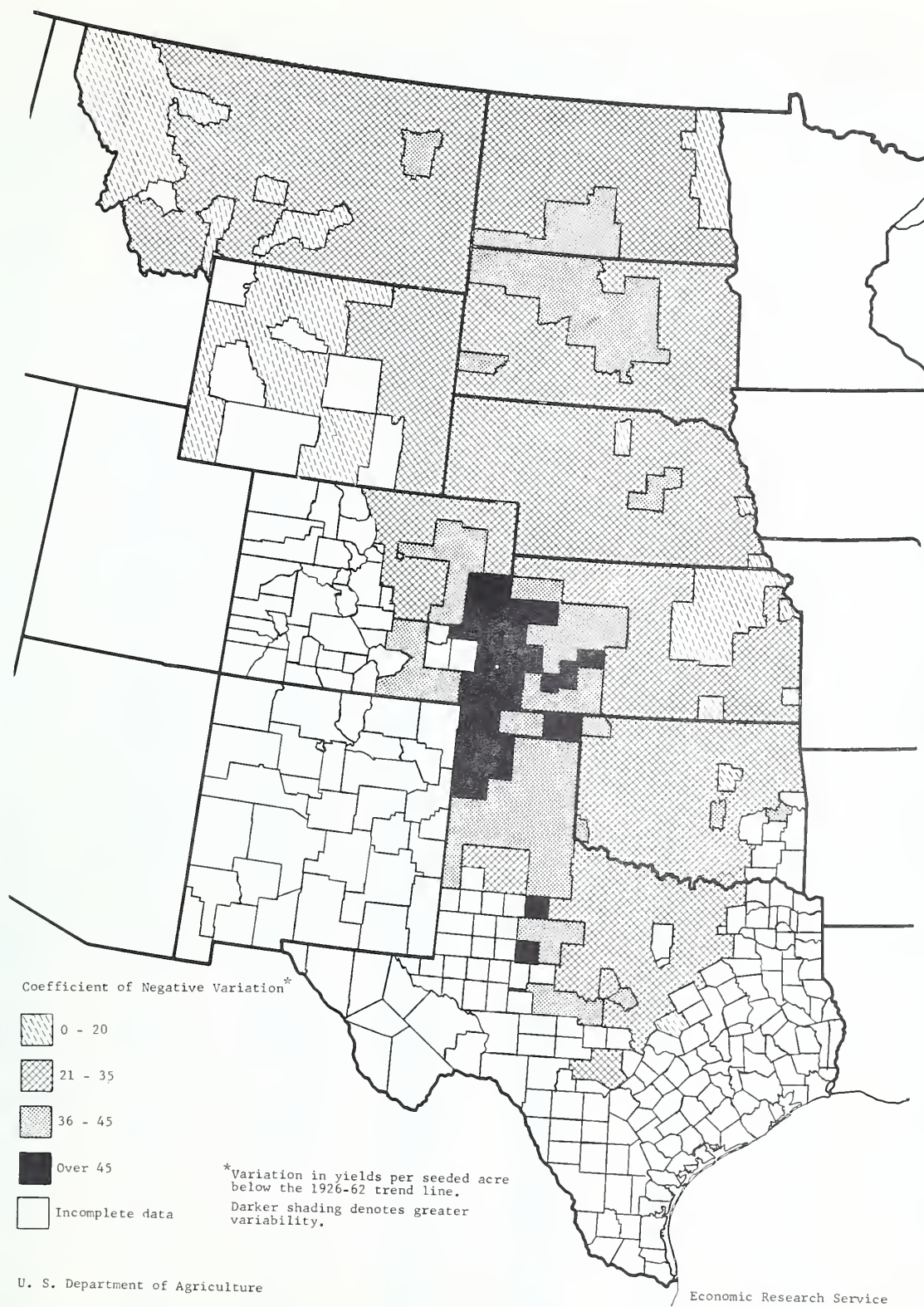


Figure 10. --Variability of wheat yields below regression line, 1926-62, Great Plains

TABLES

Table 1.--Montana: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	Bushels	Bushels	Percent	Percent	Percent	Percentage points
Northwest:						
Flathead-----	18.1	25.9	+43.1	36	19	-17
Granite-----	17.2	19.8	+15.1	37	27	-10
Lake-----	17.2	21.8	+26.7	28	17	-11
Lincoln-----	15.1	16.0	+6.0	30	17	-13
Mineral-----	15.2	19.1	+25.6	36	23	-13
Missoula-----	16.6	22.8	+37.3	34	19	-15
Powell-----	16.9	21.7	+28.4	40	23	-17
Ravalli-----	20.2	20.3	+5	34	25	-9
Sanders-----	16.9	20.1	+18.9	33	22	-11
North-central:						
Blaine-----	13.0	15.3	+17.7	54	36	-18
Chouteau-----	14.8	19.8	+33.8	45	28	-17
Glacier-----	12.5	18.3	+46.4	53	34	-19
Hill-----	10.8	15.7	+45.4	53	36	-17
Liberty-----	11.3	16.2	+43.4	49	42	-7
Phillips-----	11.5	13.9	+20.9	54	33	-21
Pondera-----	17.5	22.0	+25.7	39	25	-14
Teton-----	17.0	22.2	+30.6	41	21	-20
Toole-----	12.0	18.0	+50.0	48	36	-12
Northeast:						
Daniels-----	10.2	13.5	+32.3	62	38	-24
Dawson-----	9.0	11.8	+31.1	65	39	-26
Garfield-----	7.2	8.7	+20.8	70	45	-25
McCone-----	8.9	11.8	+32.6	69	44	-25
Richland-----	10.3	13.6	+32.0	60	36	-24
Roosevelt-----	10.9	14.7	+34.9	61	37	-24
Sheridan-----	11.3	15.6	+38.1	62	37	-25
Valley-----	10.4	13.9	+33.7	62	30	-32
Central:						
Broadwater-----	16.6	20.8	+25.3	42	14	-28
Cascade-----	17.0	21.7	+27.6	43	22	-21
Fergus-----	14.1	18.6	+31.9	45	25	-20
Golden Valley-----	10.6	15.2	+43.4	55	27	-28
Judith Basin-----	12.6	17.3	+37.3	46	27	-19
Lewis and Clark-----	14.7	18.8	+27.9	45	17	-28
Meagher-----	12.1	14.4	+19.0	48	31	-17
Musselshell-----	10.3	14.5	+40.8	56	28	-28
Petroleum-----	8.7	10.7	+23.0	60	46	-14
Wheatland-----	9.7	14.3	+47.4	51	26	-25
Southwest:						
Beaverhead-----	21.8	24.6	+12.8	42	26	-16
Gallatin-----	21.2	25.1	+18.4	31	16	-15
Jefferson-----	16.3	18.6	+14.1	39	19	-20
Madison-----	18.8	21.7	+15.4	37	22	-15
South-central:						
Big Horn-----	14.8	19.8	+33.8	41	28	-13
Carbon-----	17.1	20.9	+22.2	40	16	-24
Park-----	17.5	21.3	+21.7	42	15	-27
Stillwater-----	13.6	18.1	+33.1	45	23	-22
Sweet Grass-----	13.3	16.2	+21.8	41	25	-16
Treasure-----	10.4	15.5	+49.0	57	35	-22
Yellowstone-----	15.4	20.0	+29.9	41	20	-21
Southeast:						
Carter-----	8.8	9.2	+4.5	53	45	-8
Custer-----	8.7	11.3	+29.9	52	45	-7
Fallon-----	9.1	10.2	+12.1	47	35	-12
Powder River-----	9.7	13.5	+39.2	59	45	-14
Prairie-----	8.1	11.2	+38.3	60	45	-15
Rosebud-----	9.1	13.4	+47.3	56	36	-20
Wibaux-----	10.9	13.7	+25.7	59	37	-22

^{1/} Measures the variation about the mean.^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

Table 2.--North Dakota: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Northwest:						
Burke-----	9.9	15.1	+52.5	73	40	-33
Divide-----	10.6	14.5	+36.8	71	38	-33
Mountrail-----	9.6	14.0	+45.8	66	36	-30
Renville-----	9.8	14.9	+52.0	61	34	-27
Ward-----	10.0	15.2	+52.0	59	38	-21
Williams-----	10.6	14.8	+39.6	71	37	-34
North-central:						
Benson-----	11.0	13.8	+25.5	46	42	-4
Bottineau-----	11.0	15.7	+42.7	56	31	-25
McHenry-----	9.6	13.3	+38.5	58	36	-22
Pierce-----	10.0	12.3	+23.0	48	41	-7
Rolette-----	11.1	14.2	+27.9	41	32	-9
Northeast:						
Cavalier-----	13.5	17.2	+27.4	39	32	-7
Grand Forks-----	14.5	19.2	+32.4	32	30	-2
Nelson-----	12.4	15.9	+28.2	44	41	-3
Pembina-----	15.4	20.2	+31.2	31	21	-10
Ramsey-----	12.4	14.9	+20.2	39	39	0
Towner-----	11.8	15.1	+28.0	39	35	-4
Walsh-----	15.0	19.0	+26.7	32	26	-6
West-central:						
Dunn-----	9.6	13.4	+39.6	69	41	-28
McKenzie-----	10.5	14.5	+38.1	63	35	-28
McLean-----	9.9	13.9	+40.4	61	39	-22
Mercer-----	10.2	13.4	+31.4	60	40	-20
Oliver-----	9.9	13.2	+33.3	58	35	-23
Central:						
Eddy-----	9.8	12.9	+31.6	49	43	-6
Foster-----	9.8	14.9	+52.0	55	41	-14
Kidder-----	7.5	10.3	+37.3	61	49	-12
Sheridan-----	9.6	12.6	+31.3	55	40	-15
Stutsman-----	9.2	13.4	+45.7	54	40	-14
Wells-----	10.5	14.1	+34.3	51	41	-10
East-central:						
Barnes-----	11.3	16.0	+41.6	49	36	-13
Cass-----	14.1	18.1	+28.4	31	27	-4
Griggs-----	10.6	15.5	+46.2	50	42	-8
Steele-----	12.1	17.9	+47.9	43	38	-5
Traill-----	14.9	19.8	+32.9	28	29	-1
Southwest:						
Adams-----	9.6	11.7	+21.9	67	42	-25
Billings-----	8.6	11.6	+34.9	76	53	-23
Bowman-----	9.2	11.3	+22.8	66	42	-24
Golden Valley-----	11.7	14.9	+27.4	56	39	-17
Hettinger-----	10.0	13.4	+34.0	63	39	-24
Slope-----	9.3	12.1	+30.1	63	41	-22
Stark-----	10.7	13.8	+29.0	60	39	-21
South-central:						
Burleigh-----	8.7	11.8	+35.6	58	48	-10
Emmons-----	8.9	11.8	+32.6	65	42	-23
Grant-----	8.9	11.8	+32.6	66	39	-27
Morton-----	9.6	12.6	+31.3	62	46	-16
Sioux-----	8.5	11.3	+32.9	70	55	-15
Southeast:						
Dickey-----	8.7	12.0	+37.9	59	46	-13
LaMoure-----	9.5	13.0	+36.8	59	38	-21
Logan-----	8.4	11.1	+32.1	59	39	-20
McIntosh-----	7.9	10.9	+38.0	64	36	-28
Ransom-----	10.5	13.5	+28.6	53	36	-17
Richland-----	11.5	15.2	+32.2	44	31	-13
Sargent-----	10.8	13.7	+26.9	53	41	-12

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

Table 3.--South Dakota: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation <u>1/</u>		
	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Northwest:						
Butte-----	14.0	13.4	-4.3	48	42	-6
Corson-----	8.1	10.5	+29.6	72	44	-28
Dewey-----	7.8	10.1	+29.5	73	48	-25
Harding-----	9.1	10.3	+13.2	63	43	-20
Perkins-----	8.4	10.4	+23.8	67	40	-27
Ziebach-----	7.8	9.9	+26.9	80	53	-27
North-central:						
Brown-----	9.6	12.8	+33.3	55	38	-17
Campbell-----	8.3	11.8	+42.2	71	41	-30
Edmunds-----	7.8	10.5	+34.6	65	46	-19
Faulk-----	8.2	10.8	+31.7	59	45	-14
McPherson-----	7.7	10.8	+40.3	66	42	-24
Potter-----	8.5	11.6	+36.5	73	48	-25
Spink-----	8.2	11.3	+37.8	62	40	-22
Walworth-----	8.2	11.8	+43.9	69	39	-30
Northeast:						
Clark-----	9.5	12.2	+28.4	53	34	-19
Codington-----	10.4	12.8	+23.1	47	32	-15
Day-----	10.3	13.0	+26.2	49	40	-9
Deuel-----	11.5	13.9	+20.9	39	30	-9
Grant-----	10.7	13.8	+29.0	47	35	-12
Hamlin-----	11.2	14.2	+26.8	49	31	-18
Marshall-----	10.2	13.5	+32.4	49	36	-13
Roberts-----	10.9	13.6	+24.8	45	36	-9
West-central:						
Haakon-----	9.1	12.7	+39.6	63	45	-18
Jackson-----	8.0	11.7	+46.3	66	56	-10
Lawrence-----	16.2	15.6	-3.7	45	35	-10
Meade-----	10.4	11.7	+12.5	54	41	-13
Pennington-----	9.5	11.4	+20.0	64	49	-15
Stanley-----	8.3	12.7	+53.0	72	49	-23
Central:						
Aurora-----	8.4	10.7	+27.4	68	51	-17
Beadle-----	8.3	10.7	+28.9	61	44	-17
Brule-----	8.3	11.1	+33.7	72	55	-17
Buffalo-----	8.6	10.7	+24.4	65	51	-14
Hand-----	8.1	11.2	+38.3	60	48	-12
Hughes-----	7.5	10.4	+38.7	78	52	-26
Hyde-----	7.5	10.5	+40.0	70	48	-22
Jerauld-----	9.5	11.5	+21.1	60	42	-18
Sully-----	7.6	11.6	+52.6	84	53	-31
East-central:						
Brookings-----	11.6	14.8	+27.6	45	28	-17
Davison-----	9.5	11.3	+18.9	58	48	-10
Hanson-----	9.8	11.6	+18.4	53	50	-3
Kingsbury-----	10.5	12.8	+21.9	47	34	-13
Lake-----	11.7	13.7	+17.1	39	32	-7
McCook-----	11.0	13.3	+20.9	48	39	-9
Miner-----	9.2	11.2	+21.7	54	38	-16
Minnehaha-----	13.2	15.0	+13.6	34	28	-6
Moody-----	12.2	14.2	+16.4	36	34	-2
Sanborn-----	9.3	10.8	+16.1	56	40	-16
Southwest:						
Bennett-----	8.6	15.7	+82.6	62	53	-9
Custer-----	10.2	10.9	+6.9	63	45	-18
Fall River-----	8.2	12.6	+53.7	59	52	-7
Shannon-----	9.5	16.0	+68.4	56	48	-8
Washabaugh-----	8.2	15.2	+85.4	66	51	-15

Table 3.--South Dakota: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62--Continued

Areas and counties	Average yields			Coefficients of variation <u>1/</u>		
	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
South-central:						
Gregory-----	9.9	12.2	+23.2	56	48	-8
Jones-----	9.2	11.5	+25.0	59	52	-7
Lyman-----	9.4	12.4	+31.9	60	58	-2
Mellette-----	8.0	12.2	+52.5	65	49	-16
Todd-----	7.7	12.1	+57.1	59	55	-4
Tripp-----	9.6	12.9	+34.4	55	52	-3
Southeast:						
Bon Homme-----	11.5	12.5	+8.7	44	34	-10
Charles Mix-----	10.1	12.4	+22.8	60	45	-15
Clay-----	14.7	15.4	+4.8	34	38	+4
Douglas-----	9.9	11.7	+18.2	55	42	-13
Hutchinson-----	10.8	12.3	+13.9	41	40	-1
Lincoln-----	13.2	15.9	+20.5	39	28	-11
Turner-----	12.6	14.8	+17.5	39	31	-8
Union-----	15.3	15.5	+1.3	33	39	+6
Yankton-----	13.2	14.5	+9.8	39	29	-10

1/ Measures the variation about the mean.

2/ Barber, E. Lloyd, Variability of Wheat Yields.

Table 4.--Wyoming: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Counties	Average yields			Coefficients of variation <u>1/</u>		
	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Big Horn-----	22.4	27.2	+21.4	20	16	-4
Campbell-----	10.3	13.8	+34.0	58	30	-28
Carbon-----	12.2	10.7	-12.3	34	37	+3
Converse-----	9.2	12.6	+37.0	54	34	-20
Crook-----	12.8	16.6	+29.7	52	25	-27
Fremont-----	22.2	27.4	+23.4	19	17	-2
Goshen-----	10.6	16.2	+52.8	58	33	-25
Johnson-----	14.0	15.8	+12.9	42	29	-13
Laramie-----	10.3	17.7	+71.8	59	28	-31
Lincoln-----	14.0	14.9	+6.4	25	15	-10
Niobrara-----	8.1	13.8	+70.4	55	37	-18
Park-----	23.6	29.4	+24.6	24	18	-6
Platte-----	11.3	16.8	+48.7	60	34	-26
Sheridan-----	15.2	19.0	+25.0	39	23	-16
Weston-----	13.0	15.7	+20.8	49	28	-21

1/ Measures the variation about the mean.

2/ Barber, E. Lloyd, Variability of Wheat Yields.

Table 5.--Nebraska: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation 1/		
	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Northwest:						
Banner-----	14.8	22.5	+52.0	60	28	-32
Box Butte-----	12.6	20.7	+64.3	60	31	-29
Cheyenne-----	15.5	23.4	+51.0	41	24	-17
Dawes-----	12.9	20.4	+58.1	52	29	-23
Deuel-----	15.4	22.9	+48.7	59	27	-32
Garden-----	15.4	22.6	+46.8	56	26	-30
Kimball-----	13.0	17.9	+37.7	64	40	-24
Morrill-----	13.1	19.0	+45.0	53	25	-28
Scotts Bluff-----	16.0	22.1	+38.1	50	27	-23
Sheridan-----	11.5	18.4	+60.0	53	34	-19
Sioux-----	11.3	16.4	+45.1	49	33	-16
North:						
Arthur-----	10.2	3/12.1	+18.6	50	45	-5
Boyd-----	10.8	11.3	+4.6	47	60	+13
Brown-----	10.1	13.5	+33.7	44	50	+6
Cherry-----	9.6	14.3	+49.0	40	45	+5
Garfield-----	10.6	13.3	+25.5	34	44	+10
Holt-----	10.4	11.9	+14.4	35	36	+1
Keya Paha-----	9.3	12.7	+36.6	44	42	-2
Logan-----	11.3	14.3	+26.5	41	43	+2
Loup-----	10.5	12.6	+20.0	39	63	+24
McPherson-----	9.6	12.5	+30.2	47	50	+3
Rock-----	9.2	4/10.3	+12.0	41	50	+9
Wheeler-----	10.6	12.7	+19.8	35	47	+12
Northeast:						
Antelope-----	12.4	14.7	+18.5	34	49	+15
Boone-----	13.3	15.9	+19.5	54	57	+3
Burt-----	19.2	22.0	+14.6	33	42	+9
Cedar-----	14.0	15.5	+10.7	35	50	+15
Cuming-----	17.9	19.8	+10.6	34	43	+9
Dakota-----	16.7	18.6	+11.4	32	43	+11
Dixon-----	14.8	15.5	+4.7	30	48	+18
Knox-----	12.7	15.9	+25.2	39	40	+1
Madison-----	14.5	17.2	+18.6	39	44	+5
Pierce-----	13.5	15.9	+17.8	36	50	+14
Stanton-----	15.0	16.8	+12.0	39	51	+12
Thurston-----	15.1	18.6	+23.2	41	43	+2
Wayne-----	15.6	17.1	+9.6	37	48	+11
Central:						
Buffalo-----	12.3	15.9	+29.3	53	47	-6
Custer-----	12.2	16.9	+38.5	45	42	-3
Dawson-----	14.0	17.5	+25.0	44	35	-9
Greeley-----	11.7	15.3	+30.8	52	48	-4
Hall-----	13.4	15.7	+17.1	51	46	-5
Howard-----	12.6	16.0	+27.0	56	50	-6
Sherman-----	11.1	14.8	+33.3	59	55	-4
Valley-----	12.2	16.0	+31.1	51	51	0

Table 5.--Nebraska: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62--Continued

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	Bushels	Bushels	Percent	Percent	Percent	Percentage points
East:						
Butler-----	17.0	20.3	+19.4	39	42	+3
Case-----	18.4	21.3	+15.8	27	39	+12
Colfax-----	17.1	19.7	+15.2	37	45	+8
Dodge-----	19.4	21.6	+11.3	32	42	+10
Douglas-----	18.4	21.7	+17.9	27	35	+8
Hamilton-----	14.2	17.8	+25.4	54	44	-10
Lancaster-----	16.9	19.2	+13.6	29	36	+7
Merrick-----	14.1	16.5	+17.0	46	43	-3
Nance-----	14.5	17.8	+22.8	51	49	-2
Platte-----	16.1	20.0	+24.2	41	43	+2
Polk-----	16.4	20.0	+22.0	43	43	0
Sarpy-----	18.7	21.4	+14.4	24	35	+11
Sanders-----	17.7	20.6	+16.4	31	38	+7
Seward-----	16.6	19.6	+18.1	36	39	+3
Washington-----	18.6	21.1	+13.4	31	42	+11
York-----	14.5	18.1	+24.8	49	41	-8
Southwest:						
Chase-----	14.1	20.8	+47.5	59	31	-28
Dundy-----	13.7	19.5	+42.3	59	35	-24
Frontier-----	11.3	18.1	+60.2	59	36	-23
Hayes-----	12.2	18.2	+49.2	59	37	-22
Hitchcock-----	12.6	19.7	+56.3	58	33	-25
Keith-----	15.1	21.7	+43.7	51	24	-27
Lincoln-----	11.6	17.0	+46.6	53	33	-20
Perkins-----	13.5	21.2	+57.0	61	28	-33
Redwillow-----	12.1	19.3	+59.5	59	35	-24
South:						
Adams-----	12.2	12.5	+2.5	54	60	+6
Franklin-----	10.8	16.4	+51.9	57	41	-16
Furnas-----	11.8	18.2	+54.2	53	36	-17
Gosper-----	12.0	19.0	+58.3	56	38	-18
Harlan-----	11.2	18.8	+67.9	60	41	-19
Kearney-----	11.4	16.4	+43.9	54	42	-12
Phelps-----	11.3	17.8	+57.5	58	44	-14
Webster-----	11.0	16.2	+47.3	60	43	-17
Southeast:						
Clay-----	12.7	16.4	+29.1	55	42	-13
Fillmore-----	13.8	17.0	+23.2	51	42	-9
Gage-----	16.5	18.1	+9.7	30	40	+10
Jefferson-----	15.8	17.3	+9.5	34	41	+7
Johnson-----	16.8	18.4	+9.5	33	36	+3
Nemaha-----	19.1	20.4	+6.8	28	34	+6
Nuckolls-----	12.5	16.3	+30.4	51	44	-8
Otoe-----	18.4	20.8	+13.0	31	33	+2
Pawnee-----	16.5	18.2	+10.3	31	37	+6
Richardson-----	20.5	21.3	+3.9	25	32	+7
Saline-----	16.7	18.3	+9.6	33	38	+5
Thayer-----	14.6	17.5	+19.9	42	39	-3

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

^{3/} 1945 and 1953 data omitted.

^{4/} 1957 data omitted.

Table 6.--Colorado: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
North-central and Northeast:						
Boulder-----	21.4	18.7	-12.6	29	49	+20
Jefferson-----	22.2	20.3	-8.6	21	38	+17
Larimer-----	18.9	15.6	-17.5	31	54	+23
Logan-----	10.6	17.4	+64.2	63	31	-32
Morgan-----	8.8	13.8	+56.8	61	48	-13
Sedgwick-----	12.6	21.7	+72.2	68	25	-43
Weld-----	13.4	16.1	+20.1	44	45	+1
East-central:						
Adams-----	12.8	17.4	+35.9	58	47	-11
Arapahoe-----	11.7	16.3	+39.3	59	47	-12
Cheyenne-----	7.2	11.4	+58.3	92	68	-24
Douglas-----	14.3	18.2	+27.3	39	32	-7
Elbert-----	9.2	14.0	+52.2	57	45	-12
El Paso-----	8.8	10.9	+23.9	43	47	+4
Kiowa-----	7.2	9.1	+26.4	89	79	-10
Kit Carson-----	8.8	13.2	+50.0	86	59	-27
Lincoln-----	8.7	13.6	+56.3	84	78	-6
Phillips-----	11.2	20.6	+83.9	69	31	-38
Washington-----	7.5	15.2	+102.7	82	46	-36
Yuma-----	11.1	17.5	+57.7	72	39	-33
Southeast:						
Baca-----	7.7	9.7	+26.0	92	78	-14
Las Animas-----	8.8	8.2	-6.8	58	71	+13
Prowers-----	13.4	10.3	-23.1	53	82	+29
Pueblo-----	11.0	10.4	-5.5	37	62	+25

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

Table 7.--Kansas: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation <u>1/</u>		
	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62	1926-48 <u>2/</u>	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Northwest:						
Cheyenne-----	12.5	18.8	+50.4	64	42	-22
Decatur-----	10.6	19.1	+80.2	70	42	-28
Graham-----	8.6	14.1	+64.0	70	43	-27
Norton-----	9.7	17.3	+78.4	67	41	-26
Rawlins-----	12.2	23.0	+88.5	59	36	-23
Sheridan-----	8.9	15.8	+77.5	78	57	-21
Sherman-----	9.7	16.5	+70.1	82	55	-27
Thomas-----	9.7	17.2	+77.3	77	53	-24
West-central:						
Grove-----	9.5	15.9	+67.4	78	66	-12
Greeley-----	8.2	13.5	+64.6	93	71	-22
Lane-----	9.5	15.6	+64.2	78	59	-19
Logan-----	8.1	14.7	+81.5	84	65	-19
Ness-----	9.5	13.5	+42.1	67	54	-13
Scott-----	9.3	16.3	+75.3	81	62	-19
Trego-----	9.6	13.9	+44.8	62	59	-3
Wallace-----	8.6	14.2	+65.1	93	63	-30
Wichita-----	8.6	15.6	+81.4	82	62	-20
Southwest:						
Clark-----	10.4	13.5	+29.8	62	52	-10
Finney-----	9.5	15.5	+63.2	75	60	-15
Ford-----	10.5	13.5	+28.6	70	58	-12
Grant-----	9.1	14.4	+58.2	83	69	-14
Gray-----	10.0	13.4	+34.0	72	64	-8
Hamilton-----	9.8	14.2	+44.9	89	70	-19
Haskell-----	9.5	13.1	+37.9	77	66	-11
Hodgeman-----	8.8	12.3	+39.8	72	63	-9
Kearny-----	9.9	15.9	+60.6	82	69	-13
Meade-----	10.7	13.5	+26.2	66	57	-9
Morton-----	7.9	11.5	+45.6	87	68	-19
Seward-----	9.6	12.3	+28.1	72	63	-9
Stanton-----	10.3	17.1	+66.0	87	57	-30
Stevens-----	9.0	13.8	+53.3	76	56	-20
North-central:						
Clay-----	15.4	17.6	+14.3	23	32	+9
Cloud-----	14.0	15.9	+13.6	29	37	+8
Jewell-----	12.0	14.4	+20.0	40	44	+4
Mitchell-----	13.0	15.0	+15.4	42	38	-4
Osborne-----	11.6	13.5	+16.4	48	46	-2
Ottawa-----	14.6	16.9	+15.8	25	30	+5
Phillips-----	9.6	13.5	+40.6	53	49	-4
Republic-----	14.4	16.2	+12.5	29	36	+7
Rooks-----	9.1	13.4	+47.3	56	43	-13
Smith-----	10.6	14.0	+32.1	49	48	-1
Washington-----	14.8	17.5	+18.2	20	35	+15
Central:						
Barton-----	12.5	15.2	+21.6	42	39	-3
Dickinson-----	15.7	17.8	+13.4	17	33	+16
Ellis-----	10.7	12.8	+19.6	52	51	-1
Ellsworth-----	12.6	16.1	+27.8	39	37	-2
Lincoln-----	12.7	15.0	+18.1	47	44	-3
McPherson-----	15.2	18.1	+19.1	24	28	+4
Marion-----	13.6	16.8	+23.5	22	36	+14
Rice-----	13.7	16.8	+22.6	31	31	0
Rush-----	11.0	14.0	+27.3	56	49	-7
Russell-----	11.7	13.7	+17.1	53	47	-6
Saline-----	14.6	17.0	+16.4	22	34	+12
South-central:						
Barber-----	13.1	15.6	+19.1	30	42	+12
Comanche-----	11.3	13.4	+18.6	46	49	+ 3
Edwards-----	11.4	13.9	+21.9	49	54	+ 5
Harper-----	13.6	16.3	+19.9	27	37	+10
Harvey-----	14.4	18.0	+25.0	30	37	+ 7
Kingman-----	12.7	14.4	+13.4	25	34	+ 9
Kiowa-----	11.3	14.1	+24.8	48	48	0
Pawnee-----	11.5	14.7	+27.8	47	48	+ 1
Pratt-----	13.4	14.7	+ 9.7	33	48	+15
Reno-----	14.2	16.6	+16.9	24	33	+9
Sedgwick-----	14.5	17.5	+20.7	29	36	+7
Stafford-----	12.8	14.3	+11.7	32	43	+11
Summer-----	12.8	17.2	+34.4	29	41	+12

Table 7.--Kansas: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62--Continued

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Northeast:						
Atchison-----	15.7	19.2	+22.3	30	38	+8
Brown-----	18.8	22.3	+18.6	20	30	+10
Doniphan-----	16.4	21.4	+30.5	25	35	+10
Jackson-----	14.7	19.2	+30.6	25	38	+13
Jefferson-----	15.8	19.8	+25.3	30	37	+7
Leavenworth-----	14.8	18.7	+26.4	31	39	+8
Marshall-----	15.9	18.4	+15.7	23	37	+14
Nemaha-----	17.4	21.2	+21.8	21	30	+9
Pottawatomie-----	17.9	20.7	+15.6	20	27	+7
Riley-----	18.1	20.2	+11.6	20	28	+8
Wyandotte-----	16.6	21.3	+28.3	23	39	+16
East-central:						
Anderson-----	14.5	22.5	+55.2	28	37	+9
Chase-----	18.6	21.7	+16.7	22	26	+4
Coffey-----	14.1	19.3	+36.9	34	44	+10
Douglas-----	16.0	21.2	+32.5	29	38	+9
Franklin-----	14.3	20.4	+42.7	31	41	+10
Geary-----	17.9	21.3	+19.0	23	29	+6
Johnson-----	14.5	20.5	+41.4	34	41	+7
Linn-----	13.7	19.1	+39.4	33	38	+5
Lyon-----	14.4	19.6	+36.1	31	40	+9
Miami-----	13.7	20.1	+46.7	31	39	+8
Morris-----	15.1	18.2	+20.5	24	34	+10
Osage-----	14.6	20.9	+43.2	32	40	+8
Shawnee-----	17.8	22.4	+25.8	22	34	+12
Wabaunsee-----	17.8	20.8	+16.9	21	28	+7
Southeast:						
Allen-----	13.4	21.1	+57.5	29	38	+9
Bourbon-----	12.9	18.8	+45.7	31	36	+5
Butler-----	13.1	17.7	+35.1	30	36	+6
Chautauqua-----	12.3	17.1	+39.0	32	48	+16
Cherokee-----	12.0	17.2	+43.3	32	41	+9
Cowley-----	14.1	19.3	+36.9	27	33	+6
Crawford-----	12.0	17.6	+46.7	27	38	+11
Elk-----	13.4	18.3	+36.6	27	39	+12
Greenwood-----	14.1	19.4	+37.6	23	34	+11
Labette-----	12.0	18.0	+50.0	30	41	+11
Montgomery-----	12.2	18.0	+47.5	29	45	+16
Neosho-----	12.6	19.2	+52.4	31	40	+9
Wilson-----	14.3	19.8	+38.5	30	36	+6
Woodson-----	12.6	18.3	+45.2	32	44	+12

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

Table 8.--Oklahoma: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation 1/		
	1926-48 2/	1940-62	Change, 1926-48 to 1940-62	1926-48 2/	1940-62	Change, 1926-48 to 1940-62
	Bushels	Bushels	Percent	Percent	Percent	Percentage points
Northwest:						
Beaver-----	9.3	11.8	+26.9	62	55	-7
Cimarron-----	6.8	8.5	+25.0	87	69	-18
Ellis-----	9.2	10.3	+12.0	39	48	+9
Harper-----	9.1	11.3	+24.2	56	53	-3
Texas-----	8.6	10.3	+19.8	72	61	-11
North-central:						
Alfalfa-----	14.6	17.1	+17.1	31	37	+6
Garfield-----	13.4	16.2	+20.9	26	39	+13
Grant-----	13.6	16.3	+19.9	27	37	+10
Kay-----	13.2	18.0	+36.4	28	37	+9
Major-----	12.5	14.0	+12.0	24	45	+21
Noble-----	10.8	14.8	+37.0	25	43	+18
Woods-----	11.8	14.4	+22.0	31	43	+12
Woodward-----	9.2	10.6	+15.2	33	54	+21
Northeast:						
Craig-----	9.4	15.4	+63.8	25	47	+22
Delaware-----	9.8	14.1	+43.9	28	53	+25
Mayes-----	9.9	12.5	+26.3	28	53	+25
Nowata-----	9.8	14.7	+50.0	19	47	+28
Osage-----	11.4	15.7	+37.7	27	42	+15
Ottawa-----	11.0	17.0	+54.5	27	42	+15
Pawnee-----	10.5	14.9	+41.9	30	44	+14
Rogers-----	9.5	13.2	+38.9	27	49	+22
Tulsa-----	10.6	13.6	+28.3	34	53	+19
Wagoner-----	9.8	14.6	+49.0	30	48	+18
Washington-----	11.3	15.1	+33.6	25	46	+21
West-central:						
Beckham-----	9.9	10.8	+9.1	39	52	+13
Blaine-----	12.8	15.0	+17.2	27	41	+14
Custer-----	12.4	13.4	+8.1	27	43	+16
Dewey-----	11.2	11.8	+5.4	25	43	+18
Roger Mills-----	9.0	9.3	+3.3	40	58	+18
Washita-----	12.1	14.0	+15.7	30	39	+9
Central:						
Canadian-----	12.1	14.6	+20.7	24	49	+25
Cleveland-----	10.8	12.6	+16.7	29	49	+20
Creek-----	10.3	9.5	-7.8	35	62	+27
Grady-----	11.3	14.6	+29.2	28	54	+26
Kingfisher-----	12.5	13.9	+11.2	24	42	+18
Lincoln-----	10.3	11.5	+11.7	29	48	+19
Logan-----	11.7	14.4	+23.1	21	46	+25
McClain-----	11.5	15.4	+33.9	28	46	+18
Okfuskee-----	10.9	11.8	+8.3	37	40	+3
Oklahoma-----	11.6	14.4	+24.1	21	50	+29
Payne-----	10.3	13.3	+29.1	23	42	+19
Pottawatomie-----	10.9	15.2	+39.4	29	45	+16
Seminole-----	9.7	11.5	+18.6	29	53	+24

Table 8.--Oklahoma: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62--Continued

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
East-central:						
Adair-----	9.4	10.2	+8.5	29	57	+28
Cherokee-----	9.0	9.1	+1.1	30	61	+31
Haskell-----	9.0	15.7	+74.4	45	50	+5
Hughes-----	9.7	12.7	+30.9	29	44	+15
McIntosh-----	9.3	12.4	+33.3	32	48	+16
Muskogee-----	9.8	14.9	+52.0	31	47	+16
Okmulgee-----	9.1	9.6	+5.5	27	55	+28
Pittsburg-----	8.8	11.4	+29.5	24	37	+13
Sequoyah ^{3/} -----	9.4	17.8	+89.4	34	39	+5
Southwest:						
Caddo-----	12.7	15.6	+22.8	30	39	+9
Comanche-----	9.6	11.4	+18.8	37	45	+8
Cotton-----	10.2	12.8	+25.5	42	45	+3
Greer-----	11.0	10.9	-.9	34	62	+28
Harmon-----	9.9	10.4	+5.1	44	65	+21
Jackson-----	11.0	12.5	+13.6	39	53	+14
Kiowa-----	12.2	13.7	+12.3	28	45	+17
Tillman-----	13.0	16.0	+23.1	37	32	-5
South-central:						
Atoka-----	9.5	9.0	-5.3	35	65	+30
Bryan-----	10.0	13.5	+35.0	36	43	+7
Carter-----	9.8	10.1	+3.1	32	51	+19
Coal-----	9.4	10.4	+10.6	29	47	+18
Garvin-----	11.9	14.0	+17.6	37	46	+9
Jefferson-----	9.2	10.8	+17.4	47	58	+11
Johnston-----	10.5	10.6	+1.0	38	59	+21
Love-----	10.1	11.3	+11.9	38	42	+4
Marshall-----	10.0	11.6	+16.0	33	45	+12
Murray-----	11.8	13.1	+11.0	35	56	+21
Pontotoc-----	10.7	11.5	+7.5	32	49	+17
Stephens-----	9.2	12.8	+39.1	42	46	+4

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

^{3/} 1926-27, 1929, 1936-37, and 1939-48 data omitted.

Table 9.--Texas: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62

Areas and counties	Average yields			Coefficients of variation 1/		
	1926-48 2/	1940-62	Change, 1926-48 to 1940-62	1926-48 2/	1940-62	Change, 1926-48 to 1940-62
	Bushels	Bushels	Percent	Percent	Percent	Percentage points
Northwest:						
Armstrong-----	9.9	9.9	0.0	58	69	+11
Bailey-----	9.1	10.5	+15.4	62	68	+6
Briscoe-----	8.9	9.5	+6.7	54	65	+11
Carson-----	10.3	10.2	-1.0	58	67	+9
Castro-----	8.7	11.6	+33.3	65	78	+13
Childress-----	8.5	8.8	+3.5	49	63	+14
Collingsworth-----	7.7	9.1	+18.2	48	57	+9
Cottle-----	8.2	8.2	.0	59	59	0
Crosby-----	9.0	10.8	+20.0	51	53	+2
Dallam-----	7.3	8.2	+12.3	82	69	-13
Deaf Smith-----	8.0	10.6	+32.5	71	72	+1
Dickens-----	7.7	6.9	-10.4	58	72	+14
Donley-----	9.2	8.3	-9.8	46	62	+16
Floyd-----	8.3	10.5	+26.5	48	59	+11
Gray-----	10.4	10.0	-4.0	57	69	+12
Hale-----	8.3	11.2	+34.9	52	76	+24
Hall-----	8.0	9.0	+12.5	54	56	+2
Hansford-----	9.6	10.1	+5.2	70	70	0
Hartley-----	7.1	8.3	+16.9	79	70	-9
Hemphill-----	10.6	10.0	-5.7	48	56	+8
Hutchinson-----	8.5	10.0	+17.6	76	77	+1
King-----	3/7.4	7.2	-2.7	54	65	+11
Lamb-----	9.8	12.3	+25.5	56	63	+7
Lipscomb-----	9.8	10.1	+3.1	53	59	+6
Lubbock-----	7.7	10.4	+35.1	65	72	+7
Moore-----	8.3	9.3	+12.0	81	81	0
Motley-----	8.1	7.5	-7.4	49	65	+16
Ochiltree-----	10.8	11.2	+3.7	62	66	+4
Oldham-----	7.3	8.4	+15.1	79	74	-5
Parmer-----	8.7	11.8	+35.6	64	83	+19
Potter-----	9.0	10.3	+14.4	72	69	-3
Randall-----	8.7	9.8	+12.6	66	67	+1
Roberts-----	11.5	10.8	-6.1	59	67	+8
Sherman-----	9.0	9.7	+7.8	69	67	-2
Stonewall-----	3/7.5	7.1	-5.3	42	57	+15
Swisher-----	8.4	10.7	+27.4	63	71	+8
Wheeler-----	8.4	8.7	+3.6	58	61	+3
North-central:						
Archer-----	9.1	10.0	+9.9	42	42	0
Baylor-----	9.8	11.7	+19.4	46	32	-14
Clay-----	9.2	10.0	+8.7	42	44	+2
Collin-----	12.4	14.4	+16.1	41	38	-3
Cooke-----	11.0	11.8	+7.3	42	47	+5
Denton-----	11.8	12.0	+1.7	42	46	+4
Fannin-----	10.3	13.9	+35.0	36	39	+3
Foard-----	10.6	11.0	+3.8	38	36	-2
Grayson-----	10.7	12.6	+17.8	38	43	+5
Hardeman-----	9.8	10.2	+4.1	47	50	+3
Haskell-----	9.6	9.7	+1.0	48	48	0
Jack-----	9.2	8.0	-13.0	43	52	+9
Knox-----	10.9	11.3	+3.7	36	35	-1
Montague-----	8.5	9.9	+16.5	47	43	-4
Throckmorton-----	10.6	10.1	-4.7	43	47	+4
Wichita-----	9.2	11.3	+22.8	46	40	-6
Wilbarger-----	10.5	12.8	+21.9	45	32	-13
Wise-----	10.4	10.6	+1.9	41	49	+8
Young-----	9.4	9.8	+4.3	44	47	+3

Table 9.--Texas: Changes in average wheat yields and in coefficients of variation, by counties, 1926-48 and 1940-62--Continued

Areas and counties	Average yields			Coefficients of variation ^{1/}		
	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62	1926-48 ^{2/}	1940-62	Change, 1926-48 to 1940-62
	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percentage points</u>
Central:						
Bell-----	10.3	10.7	+3.9	33	25	-8
Bosque-----	10.3	9.9	-3.9	41	46	+5
Brown-----	9.6	7.8	-18.8	41	58	+17
Burnet-----	8.8	4/8.6	-2.3	41	48	+7
Callahan-----	9.7	7.7	-20.6	39	56	+17
Coleman-----	10.0	7.7	-23.0	51	61	+10
Comanche-----	9.3	7.6	-18.3	49	52	+3
Concho-----	9.0	7.5	-16.7	53	73	+20
Coryell-----	10.2	10.2	.0	32	39	+7
Dallas-----	12.0	13.2	+10.0	36	38	+2
Eastland-----	9.5	7.8	-17.9	42	52	+10
Ellis-----	10.6	12.2	+15.1	35	38	+3
Erath-----	9.3	5/7.4	-20.4	43	50	+7
Fisher-----	7.2	6.8	-5.6	53	70	+17
Gillespie-----	9.8	10.5	+7.1	34	41	+7
Hamilton-----	10.1	9.5	-5.9	33	40	+7
Hill-----	9.5	12.4	+30.5	40	36	-4
Johnson-----	10.9	11.7	+7.3	32	38	+6
Jones-----	8.1	7.9	-2.5	48	61	+13
Kendall-----	8.6	9.3	+8.1	32	44	+12
Kerr-----	8.7	6/9.4	+8.0	30	41	+11
Lampasas-----	9.6	10.0	+4.2	41	44	+3
McCulloch-----	9.4	7.8	-17.0	51	71	+20
Mills-----	9.3	8.5	-8.6	40	54	+14
Mitchell-----	7/6.9	5.1	-26.1	53	90	+37
Nolan-----	8.1	6.9	-15.0	59	67	+8
Palo Pinto-----	9.1	8.0	-12.1	35	51	+16
Runnels-----	9.2	7.2	-21.7	51	52	+1
Scurry-----	6.5	5.9	-9.2	54	69	+15
Shackelford-----	9.2	8.1	-12.0	41	57	+16
Stephens-----	8.4	7.6	-9.5	39	56	+17
Tarrant-----	11.0	10.6	-3.6	37	49	+12
Taylor-----	9.0	6.3	-30.0	44	71	+27
Tom Green-----	7.8	8/7.7	-1.3	52	58	+6

^{1/} Measures the variation about the mean.

^{2/} Barber, E. Lloyd, Variability of Wheat Yields.

^{3/} 1939-48 data omitted.

^{4/} 1961-62 data omitted.

^{5/} 1958-62 data omitted.

^{6/} 1957 data omitted.

^{7/} 1940-48 data omitted.

^{8/} 1955-57 data omitted.

Table 10.--Montana: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Flathead-----	21.6	11.04	+0.56	21.9	13.9
Granite-----	17.4	11.97	+.28	30.3	16.1
Lake-----	18.5	11.95	+.35	20.2	12.4
Lincoln-----	15.5	13.85	+.09	24.1	15.5
Mineral-----	17.8	9.01	+.48	22.4	13.3
Missoula-----	18.8	10.14	+.46	23.9	14.3
Powell-----	19.0	12.90	+.32	26.1	16.4
Ravalli-----	26.3	15.47	+.57	38.8	19.7
Sanders-----	18.0	13.14	+.25	25.7	15.4
North-central:					
Blaine-----	13.8	11.33	+.13	44.6	28.0
Chouteau-----	17.3	10.51	+.36	34.5	24.1
Glacier-----	16.5	8.68	+.41	36.0	26.1
Hill-----	13.6	7.67	+.31	42.2	28.3
Liberty-----	14.9	9.41	+.29	43.0	34.5
Phillips-----	12.2	9.59	+.14	44.9	28.2
Pondera-----	20.0	14.30	+.30	30.2	22.2
Teton-----	19.6	12.90	+.35	28.9	20.4
Toole-----	16.2	10.34	+.31	38.1	30.3
Northeast:					
Daniels-----	11.4	7.74	+.19	51.7	31.9
Dawson-----	9.9	7.00	+.15	53.3	33.3
Garfield-----	7.5	6.07	+.08	62.6	37.5
McCone-----	10.0	7.08	+.16	57.4	36.9
Richland-----	11.4	7.86	+.18	49.7	30.5
Roosevelt-----	12.2	8.01	+.22	50.5	33.9
Sheridan-----	12.7	7.80	+.26	51.4	32.3
Valley-----	11.6	8.14	+.18	48.5	31.9
Central:					
Broadwater-----	19.1	14.13	+.26	27.4	23.1
Cascade-----	19.0	12.98	+.32	32.3	22.6
Fergus-----	15.3	8.99	+.33	34.3	20.7
Golden Valley-----	12.3	5.82	+.34	38.5	22.6
Judith Basin-----	14.6	8.27	+.33	34.8	22.6
Lewis and Clark-----	16.1	11.25	+.26	31.7	20.7
Meagher-----	12.1	8.70	+.18	44.4	25.6
Musselshell-----	11.2	5.32	+.31	43.4	23.5
Petroleum-----	8.4	4.86	+.19	57.9	29.0
Wheatland-----	10.7	4.85	+.31	37.0	17.9
Southwest:					
Beaverhead-----	22.8	17.87	+.26	33.6	23.2
Gallatin-----	22.4	16.48	+.31	23.9	16.8
Jefferson-----	17.2	14.19	+.16	30.4	23.3
Madison-----	19.6	15.63	+.21	30.8	24.0
South-central:					
Big Horn-----	16.9	10.11	+.36	31.8	23.5
Carbon-----	18.6	13.56	+.27	29.2	21.6
Park-----	18.5	13.44	+.27	30.4	21.4
Stillwater-----	15.0	8.68	+.33	32.5	19.7
Sweet Grass-----	14.5	10.25	+.22	33.5	22.4
Treasure-----	12.0	5.36	+.35	44.3	21.1
Yellowstone-----	17.2	10.58	+.35	30.0	19.9
Southeast:					
Carter-----	8.2	7.36	+.05	54.5	31.9
Custer-----	9.5	5.50	+.21	52.0	30.1
Fallon-----	9.4	7.95	+.08	43.3	31.5
Powder River-----	11.6	6.48	+.27	50.1	30.9
Prairie-----	8.7	4.61	+.21	59.0	33.8
Rosebud-----	10.5	4.73	+.30	46.1	27.1
Wibaux-----	11.3	7.54	+.20	50.8	35.2

Note: See text for explanation of statistical terms used.

Table 11.-North Dakota: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Burke-----	11.5	5.28	+0.33	56.8	35.2
Divide-----	11.3	6.81	+ .24	55.5	33.7
Mountrail-----	10.7	5.05	+ .30	52.4	33.4
Renville-----	11.4	4.67	+ .35	48.3	30.7
Ward-----	11.6	4.58	+ .37	49.7	30.8
Williams-----	11.4	6.31	+ .27	54.4	33.8
North-central:					
Benson-----	11.5	6.76	+ .25	46.9	29.7
Bottineau-----	12.2	5.67	+ .34	44.0	27.1
McHenry-----	10.4	5.13	+ .28	49.3	28.7
Pierce-----	10.4	6.78	+ .19	49.3	30.3
Rolette-----	11.9	6.69	+ .27	36.9	24.7
Northeast:					
Cavalier-----	14.6	8.79	+ .30	34.8	23.2
Grand Forks-----	16.3	7.99	+ .44	27.7	16.5
Nelson-----	13.3	7.30	+ .31	41.6	26.0
Pembina-----	17.3	10.16	+ .38	22.0	13.8
Ramsey-----	12.9	8.44	+ .23	39.0	25.6
Towner-----	12.8	7.00	+ .31	36.8	24.9
Walsh-----	16.3	9.54	+ .36	25.6	15.7
West-central:					
Dunn-----	9.9	4.82	+ .27	58.6	34.1
McKenzie-----	11.1	5.99	+ .27	52.8	33.3
McLean-----	10.8	5.02	+ .30	52.0	31.9
Mercer-----	10.6	5.93	+ .24	52.9	32.9
Oliver-----	10.5	6.37	+ .22	49.0	32.9
Central:					
Eddy-----	10.4	4.90	+ .29	47.2	26.4
Foster-----	11.4	3.64	+ .41	46.5	26.0
Kidder-----	8.2	3.91	+ .23	58.5	35.1
Sheridan-----	10.0	5.72	+ .23	52.1	30.6
Stutsman-----	10.6	4.12	+ .34	46.4	28.1
Wells-----	11.2	5.11	+ .32	47.3	28.0
East-central:					
Barnes-----	12.7	5.47	+ .38	39.7	25.5
Cass-----	15.4	8.93	+ .34	27.0	15.9
Griggs-----	12.1	4.18	+ .42	45.0	22.3
Steele-----	14.1	4.70	+ .49	36.8	20.2
Traill-----	16.7	7.91	+ .46	23.9	14.3
Southwest:					
Adams-----	9.7	6.56	+ .16	58.0	37.8
Billings-----	8.5	3.88	+ .24	73.3	39.4
Bowman-----	9.3	5.64	+ .19	57.3	37.8
Golden Valley-----	12.0	7.91	+ .21	52.1	34.8
Hettinger-----	10.6	5.83	+ .25	53.4	33.4
Slope-----	9.6	5.58	+ .21	56.3	35.2
Stark-----	11.0	6.68	+ .23	53.2	33.1
South-central:					
Burleigh-----	9.4	4.63	+ .25	58.5	35.8
Emmons-----	9.4	5.12	+ .22	57.3	36.1
Grant-----	9.2	5.28	+ .21	56.4	36.2
Morton-----	10.0	6.06	+ .21	59.3	35.6
Sioux-----	8.7	4.40	+ .23	69.6	38.3
Southeast:					
Dickey-----	9.6	4.39	+ .27	55.6	34.0
LaMoure-----	10.6	4.71	+ .30	48.3	33.1
Logan-----	9.0	4.70	+ .23	51.5	32.6
McIntosh-----	8.7	4.28	+ .23	51.9	33.1
Ransom-----	11.0	6.03	+ .26	44.5	28.7
Richland-----	12.0	6.12	+ .31	38.3	21.0
Sargent-----	11.3	6.41	+ .26	48.6	31.3

Note: See text for explanation of statistical terms used.

Table 12.--South Dakota: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62:

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Butte-----	13.0	14.25	-0.07	47.5	29.5
Corson-----	8.5	5.22	+1.17	60.4	38.5
Dewey-----	8.4	4.97	+1.18	63.0	39.7
Harding-----	8.9	6.45	+1.13	56.1	35.9
Perkins-----	8.7	5.93	+1.15	55.5	37.6
Ziebach-----	8.1	5.38	+1.14	71.5	43.5
North-central:					
Brown-----	10.3	5.85	+1.23	50.4	33.2
Campbell-----	9.3	4.50	+1.25	57.3	35.0
Edmunds-----	8.5	4.54	+1.21	58.6	36.6
Faulk-----	8.7	4.52	+1.22	60.4	37.4
McPherson-----	8.5	4.17	+1.23	56.4	34.2
Potter-----	9.8	5.49	+1.23	59.8	39.0
Spink-----	9.1	4.74	+1.23	53.5	34.9
Walworth-----	9.4	4.28	+1.27	53.0	31.4
Northeast:					
Clark-----	10.3	6.33	+1.21	44.3	32.1
Codington-----	10.8	7.33	+1.18	42.9	31.9
Day-----	10.6	6.65	+1.21	49.2	33.3
Deuel-----	11.6	7.77	+1.20	36.8	24.0
Grant-----	10.5	5.80	+1.25	46.1	29.2
Hamlin-----	11.7	7.56	+1.22	42.1	30.9
Marshall-----	10.9	6.09	+1.25	45.6	29.5
Roberts-----	11.0	6.82	+1.22	44.8	29.3
West-central:					
Haakon-----	10.6	5.94	+1.24	55.3	33.2
Jackson-----	9.5	4.12	+1.28	61.8	34.2
Lawrence-----	15.0	17.19	-1.11	45.0	32.9
Meade-----	10.4	8.69	+1.09	52.0	32.4
Pennington-----	9.8	7.51	+1.12	62.9	34.9
Stanley-----	11.2	5.37	+1.31	54.6	37.7
Central:					
Aurora-----	8.4	4.70	+1.20	67.7	37.8
Beadle-----	8.8	5.06	+1.19	54.2	34.7
Brule-----	8.4	3.98	+1.23	70.6	35.0
Buffalo-----	9.0	5.37	+1.19	62.1	36.0
Hand-----	8.8	4.29	+1.24	59.9	36.3
Hughes-----	9.1	5.09	+1.21	63.3	41.7
Hyde-----	8.2	3.50	+1.25	63.3	37.1
Jerauld-----	9.7	6.83	+1.15	55.8	36.8
Sully-----	9.9	4.85	+1.27	63.8	43.2
East-central:					
Brookings-----	12.7	8.11	+1.24	34.9	24.7
Davison-----	9.2	5.63	+1.19	61.2	32.5
Hanson-----	9.3	5.20	+1.22	59.3	31.0
Kingsbury-----	11.1	7.29	+1.20	41.3	28.7
Lake-----	12.3	9.11	+1.17	37.0	24.7
McCook-----	11.0	7.66	+1.17	49.5	29.5
Miner-----	9.2	5.80	+1.18	49.9	28.7
Minnehaha-----	13.5	11.80	+1.13	32.6	22.7
Moody-----	12.9	8.95	+1.21	36.9	23.9
Sanborn-----	8.8	6.01	+1.15	55.8	32.7
Southwest:					
Bennett-----	12.4	3.35	+1.48	55.0	32.4
Custer-----	10.5	9.81	+1.01	60.5	40.6
Fall River-----	9.0	3.84	+1.27	67.7	32.7
Shannon-----	12.5	4.36	+1.43	52.3	30.9
Washabaugh-----	11.4	2.78	+1.46	56.7	30.0

Table 12.--South Dakota: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62--Continued

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
South-central:					
Gregory-----	10.4	6.61	+0.20	57.5	31.8
Jones-----	10.4	7.00	+ .18	58.4	34.5
Lyman-----	10.9	6.62	+ .23	60.9	38.5
Mellette-----	10.0	4.28	+ .30	57.2	32.2
Todd-----	9.5	3.52	+ .31	61.0	30.9
Tripp-----	11.2	6.19	+ .26	56.3	32.3
Southeast:					
Bon Homme-----	11.2	9.15	+ .11	43.6	25.9
Charles Mix-----	10.2	6.85	+ .18	58.4	33.2
Clay-----	14.7	12.76	+ .10	38.9	26.0
Douglas-----	9.5	6.09	+ .18	55.7	29.4
Hutchinson-----	10.4	7.86	+ .13	45.6	26.5
Lincoln-----	14.3	12.50	+ .09	33.4	23.8
Turner-----	12.7	9.98	+ .15	36.8	25.0
Union-----	14.8	13.75	+ .06	37.8	24.5
Yankton-----	13.0	11.16	+ .09	38.3	25.6

Note: See text for explanation of statistical terms used.

Table 13.--Wyoming: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Big Horn-----	24.1	16.44	+0.40	15.3	7.9
Campbell-----	10.8	6.55	+ .22	44.2	26.7
Carbon-----	10.5	11.58	- .04	36.8	19.7
Converse-----	9.3	4.67	+ .24	46.3	23.2
Crook-----	13.6	9.66	+ .21	40.1	26.9
Fremont-----	24.5	16.13	+ .44	13.6	7.3
Goshen-----	13.3	6.81	+ .34	40.1	29.0
Johnson-----	13.4	11.22	+ .11	39.5	26.0
Laramie-----	14.6	5.98	+ .46	31.8	26.7
Lincoln-----	14.5	13.59	+ .05	19.7	15.6
Niobrara-----	10.4	4.31	+ .32	43.9	28.7
Park-----	25.8	16.59	+ .49	18.6	10.4
Platte-----	13.9	7.04	+ .36	40.1	28.6
Sheridan 1/-	15.3	10.00	+ .28	34.1	19.7
Teton 2/-	20.2	11.00	+ .53	21.2	16.2
Uinta-----	17.7	12.83	+ .26	28.5	17.5
Washakie-----	26.9	22.44	+ .23	20.3	12.3
Weston-----	13.0	10.31	+ .14	40.3	26.3

1/ 1937 data omitted.

2/ 1931-33 data omitted.

Note: See text for explanation of statistical terms used.

Table 14.--Nebraska: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	Bushels	Bushels	Bushels	Percent	Percent
Northwest:					
Banner-----	18.0	8.90	+0.48	40.4	29.8
Box Butte-----	16.2	7.05	+ .48	42.1	29.3
Cheyenne-----	17.7	8.34	+ .49	40.6	25.8
Dawes-----	16.2	7.69	+ .45	37.4	26.4
Deuel-----	18.5	8.77	+ .51	39.4	27.8
Garden-----	18.6	9.77	+ .47	38.8	28.5
Kimball-----	14.3	8.12	+ .33	52.3	34.8
Morrill-----	15.7	8.73	+ .37	36.4	26.8
Scotts Bluff-----	19.0	12.53	+ .34	36.9	28.2
Sheridan-----	14.4	5.91	+ .45	40.3	24.5
Sioux-----	12.6	6.07	+ .34	43.5	24.7
North:					
Arthur 1/-----	10.4	7.41	+ .16	50.3	27.7
Boyd-----	11.1	7.87	+ .11	66.0	28.6
Brown-----	11.7	6.48	+ .27	50.5	29.4
Cherry-----	10.9	6.84	+ .22	52.1	29.0
Garfield-----	11.5	8.49	+ .16	45.7	24.0
Holt-----	11.1	8.68	+ .13	38.5	24.1
Keya Paha-----	10.7	5.48	+ .28	43.6	22.2
Logan-----	13.5	9.43	+ .21	40.4	30.9
Loup-----	11.6	6.47	+ .27	57.8	24.9
McPherson 2/-----	12.0	7.33	+ .26	45.3	25.9
Rock 3/-----	9.1	4.80	+ .23	50.7	18.8
Wheeler-----	10.3	6.91	+ .18	52.1	24.9
Northeast:					
Antelope-----	13.3	10.10	+ .17	48.3	26.6
Boone-----	14.9	13.60	+ .07	55.1	36.1
Burt-----	20.7	17.48	+ .15	39.1	26.5
Cedar-----	14.5	9.11	+ .23	50.8	21.0
Cuming-----	18.4	15.26	+ .16	42.0	25.0
Dakota-----	17.2	13.53	+ .20	40.1	23.7
Dixon-----	14.2	10.53	+ .19	45.6	20.7
Knox-----	13.6	9.16	+ .24	43.2	22.7
Madison-----	15.6	13.33	+ .12	45.2	28.9
Pierce-----	14.6	11.60	+ .16	50.1	30.9
Stanton-----	15.6	13.28	+ .12	49.9	27.6
Thurston-----	16.1	11.12	+ .26	46.3	24.0
Wayne-----	15.8	12.13	+ .19	48.1	24.7
Central:					
Buffalo-----	14.4	10.12	+ .23	48.3	31.7
Custer-----	15.4	9.48	+ .31	39.9	30.7
Dawson-----	15.1	10.29	+ .25	40.0	25.3
Greeley-----	14.5	11.47	+ .16	48.1	36.2
Hall-----	14.3	11.06	+ .17	47.9	31.3
Howard-----	14.5	10.76	+ .20	50.8	34.7
Sherman-----	13.2	9.58	+ .19	55.8	38.3
Valley-----	14.9	11.08	+ .20	50.3	35.4
East:					
Butler-----	18.3	13.55	+ .25	41.9	27.9
Cass-----	19.7	14.71	+ .26	33.9	22.7
Colfax-----	18.3	15.08	+ .17	42.4	26.8
Dodge-----	20.2	16.58	+ .19	38.2	26.0
Douglas-----	19.0	13.79	+ .27	33.4	19.4
Hamilton-----	16.0	11.20	+ .26	44.7	31.8
Lancaster-----	18.1	13.95	+ .22	31.4	21.3
Merrick-----	15.3	11.74	+ .19	41.9	27.5
Nance-----	16.4	13.18	+ .17	48.8	34.1
Platte-----	18.0	14.11	+ .21	42.3	28.5
Polk-----	18.2	13.62	+ .24	41.8	28.6
Sarpy-----	19.5	14.94	+ .24	31.3	20.4
Saunders-----	18.8	14.33	+ .23	35.5	23.9
Seward-----	18.2	13.61	+ .24	37.0	26.1
Washington-----	19.6	15.51	+ .21	37.8	24.6
York-----	16.4	11.03	+ .28	41.0	28.6

Table 14.--Nebraska: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62--Continued

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Southwest:					
Chase-----	16.7	7.73	+0.47	37.4	26.0
Dundy-----	16.2	7.76	+.44	40.8	28.7
Frontier-----	15.4	7.08	+.44	39.3	30.1
Hayes-----	14.9	6.39	+.45	40.9	28.8
Hitchcock-----	15.4	7.19	+.43	40.4	29.4
Keith-----	18.0	9.29	+.46	33.1	23.7
Lincoln-----	13.9	7.00	+.36	40.1	27.8
Perkins-----	16.1	6.49	+.51	38.3	24.7
Redwillow-----	15.4	6.10	+.49	40.1	27.6
South:					
Adams-----	12.1	6.31	+.31	52.6	25.6
Franklin-----	13.6	6.76	+.36	42.9	29.2
Furnas-----	15.0	6.33	+.46	37.5	25.2
Gosper-----	16.0	8.10	+.42	38.8	28.2
Harlan-----	15.3	5.46	+.52	39.0	27.7
Kearney-----	13.7	7.09	+.35	43.6	27.2
Phelps-----	14.3	5.46	+.47	44.4	27.5
Webster-----	13.6	7.39	+.33	45.2	30.5
Southeast:					
Clay-----	14.6	9.90	+.25	43.8	29.0
Fillmore-----	15.6	11.06	+.24	43.1	29.9
Gage-----	17.6	14.39	+.17	33.7	22.7
Jefferson-----	16.6	13.75	+.15	36.8	25.2
Johnson-----	17.4	13.72	+.19	33.0	23.1
Nemaha-----	19.7	16.51	+.17	29.8	20.6
Nuckolls-----	14.5	9.74	+.25	45.0	30.8
Otoe-----	19.4	15.15	+.23	31.1	22.6
Pawnee-----	17.3	13.23	+.22	32.5	22.2
Richardson-----	20.6	18.32	+.12	28.0	18.5
Saline-----	17.7	14.98	+.14	34.9	24.0
Thayer-----	16.1	12.52	+.19	37.9	26.1

1/ 1945 and 1953 data omitted.

2/ 1932, 1936-37 data omitted.

3/ 1957 data omitted.

Note: See text for explanation of statistical terms used.

Table 15.--Colorado: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62 ^{1/}

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
North-central and Northeast:					
Boulder-----	17.4	10.52	+0.37	43.7	34.5
Jefferson-----	19.1	12.27	+ .36	33.6	25.4
Larimer-----	14.7	9.45	+ .28	45.9	33.2
Logan-----	15.0	7.64	+ .39	30.7	26.3
Morgan-----	12.5	5.62	+ .36	40.3	36.2
Sedgwick-----	18.7	8.28	+ .55	27.6	25.1
Weld-----	14.7	8.88	+ .30	40.1	33.0
East-central:					
Adams-----	15.9	8.89	+ .37	42.3	35.9
Arapahoe-----	14.6	8.33	+ .33	42.7	35.1
Cheyenne-----	11.1	4.99	+ .35	56.8	49.8
Douglas-----	17.2	11.64	+ .29	29.6	24.2
Elbert-----	13.3	8.70	+ .24	39.6	33.9
El Paso-----	10.5	7.59	+ .16	43.2	29.5
Kiowa-----	9.0	3.94	+ .27	67.6	51.8
Kit Carson-----	11.9	5.69	+ .32	54.0	45.1
Lincoln-----	12.6	4.52	+ .44	68.1	43.2
Phillips-----	17.7	7.41	+ .54	29.0	25.2
Washington-----	13.7	5.48	+ .43	39.5	39.4
Yuma-----	15.2	7.98	+ .38	39.7	31.0
Southeast:					
Baca-----	9.0	5.44	+ .21	74.3	52.4
Las Animas-----	7.9	6.28	+ .10	67.6	40.9
Prowers-----	9.9	5.32	+ .25	73.2	51.0
Pueblo-----	9.5	4.75	+ .25	55.0	37.0

^{1/} Data for seeded acreages for 1926-39 were estimated using the relationships between seeded acreages and harvested acreages for 1940-62 by counties.

Note: See text for explanation of statistical terms used.

Table 16.--Kansas: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Cheyenne-----	14.9	5.54	+0.49	47.7	32.5
Decatur-----	14.0	2.09	+0.63	46.2	29.4
Graham-----	10.8	3.05	+0.41	51.6	31.8
Norton-----	13.3	2.52	+0.57	42.4	28.0
Rawlins-----	16.7	5.93	+0.57	40.5	32.8
Sheridan-----	11.5	1.05	+0.55	62.7	34.9
Sherman-----	12.3	3.39	+0.47	63.9	44.3
Thomas-----	12.2	1.99	+0.54	61.8	38.0
West-central:					
Grove-----	11.9	2.97	+0.47	71.7	44.8
Greeley-----	10.6	4.06	+0.35	77.1	55.5
Lane-----	11.6	3.66	+0.42	69.6	43.3
Logan-----	11.4	2.39	+0.47	67.9	48.4
Ness-----	10.8	5.39	+0.28	64.4	40.3
Scott-----	12.3	1.43	+0.57	67.2	42.3
Trego-----	10.9	4.47	+0.34	64.1	38.3
Wallace-----	11.8	4.16	+0.40	67.2	52.3
Wichita-----	12.1	2.13	+0.53	65.2	45.0
Southwest:					
Clark-----	11.0	7.44	+0.19	62.6	39.4
Finney-----	11.7	2.38	+0.49	68.0	41.5
Ford-----	11.2	7.39	+0.20	70.4	43.0
Grant-----	10.9	2.64	+0.43	79.8	43.6
Gray-----	10.7	5.82	+0.26	75.6	46.7
Hamilton-----	11.2	6.04	+0.27	80.6	52.4
Haskell-----	10.4	5.15	+0.28	78.7	45.8
Hodgeman-----	9.9	5.34	+0.24	73.0	46.2
Kearny-----	12.3	3.34	+0.47	73.1	48.2
Meade-----	10.9	7.33	+0.19	69.6	45.0
Morton-----	9.0	4.40	+0.24	83.5	51.8
Seward-----	10.0	6.16	+0.20	76.2	44.2
Stanton-----	13.4	4.55	+0.47	64.8	46.8
Stevens-----	10.5	3.86	+0.34	68.8	41.3
North-central:					
Clay-----	16.7	12.09	+0.24	27.4	17.5
Cloud-----	14.8	10.85	+0.21	34.5	22.1
Jewell-----	13.3	9.09	+0.22	43.8	30.4
Mitchell-----	13.7	10.77	+0.16	42.3	29.7
Osborne-----	12.2	8.41	+0.20	48.1	34.1
Ottawa-----	15.5	11.04	+0.23	29.0	20.2
Phillips-----	11.9	5.52	+0.33	46.7	31.8
Republic-----	15.5	11.87	+0.19	31.9	21.8
Rooks-----	10.8	4.05	+0.35	44.9	27.2
Smith-----	12.3	6.62	+0.30	47.1	31.6
Washington-----	16.5	11.10	+0.28	27.2	17.5
Central:					
Barton-----	13.2	9.52	+0.20	42.6	27.1
Dickinson-----	16.9	12.65	+0.22	26.2	16.4
Ellis-----	11.3	8.32	+0.16	55.2	36.8
Ellsworth-----	13.9	8.72	+0.27	37.2	24.0
Lincoln-----	13.3	8.98	+0.23	44.5	30.4
McPherson-----	16.5	11.86	+0.25	26.4	16.7
Marion-----	15.6	10.07	+0.29	27.2	17.1
Rice-----	14.8	10.16	+0.25	33.0	21.7
Rush-----	12.0	8.80	+0.17	57.9	36.6
Russell-----	12.1	9.29	+0.15	51.2	33.6
Saline-----	15.4	9.80	+0.30	28.5	19.5

Table 16.--Kansas: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62--Continued

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
South-central:					
Barber-----	14.0	9.78	+0.22	38.9	25.3
Comanche-----	11.7	9.24	+1.13	51.8	33.8
Edwards-----	12.4	8.87	+1.18	54.0	34.6
Harper-----	14.8	9.57	+1.27	34.8	23.8
Harvey-----	16.3	10.64	+1.30	32.9	21.3
Kingman-----	13.6	10.73	+1.15	32.0	21.8
Kiowa-----	12.4	8.68	+1.20	50.3	34.0
Pawnee-----	12.6	8.12	+1.24	50.8	30.9
Pratt-----	13.9	11.66	+1.12	40.6	28.1
Reno-----	15.5	11.59	+1.20	30.8	20.7
Sedgwick-----	16.1	10.98	+1.27	32.9	21.7
Stafford-----	13.2	10.77	+1.13	41.0	24.8
Sumner-----	15.4	8.49	+1.36	34.2	21.2
Northeast:					
Atchison-----	17.6	11.85	+1.31	33.4	20.6
Brown-----	20.2	14.29	+1.31	25.6	15.6
Doniphan-----	18.6	11.41	+1.38	30.5	18.1
Jackson-----	17.5	10.83	+1.35	30.0	19.5
Jefferson-----	18.5	12.50	+1.32	31.1	21.7
Leavenworth-----	17.5	10.48	+1.37	30.8	20.0
Marshall-----	17.5	12.85	+1.24	30.1	19.4
Nemaha-----	19.3	13.30	+1.32	25.4	16.1
Pottawatomie-----	19.9	15.53	+1.23	22.3	15.7
Riley-----	19.5	15.59	+1.21	23.0	14.5
Wyandotte-----	19.9	11.47	+1.44	27.8	18.9
East-central:					
Anderson-----	19.9	11.32	+1.45	30.1	25.1
Chase-----	20.7	16.15	+1.24	24.0	16.5
Coffey-----	17.3	11.04	+1.33	39.4	25.0
Douglas-----	19.4	11.76	+1.40	30.5	21.3
Franklin-----	18.4	10.96	+1.39	33.2	24.0
Geary-----	20.2	14.27	+1.31	23.7	16.8
Johnson-----	18.0	9.29	+1.46	32.8	21.8
Linn-----	17.2	11.03	+1.32	33.0	26.0
Lyon-----	17.8	11.61	+1.33	34.7	23.1
Miami-----	17.8	9.93	+1.42	31.2	23.2
Morris-----	17.3	12.29	+1.26	27.2	18.9
Osage-----	18.8	11.58	+1.38	33.3	24.2
Shawnee-----	21.0	13.67	+1.39	26.3	17.8
Wabaunsee-----	19.9	15.72	+1.22	23.8	14.6
Southeast:					
Allen-----	18.8	10.90	+1.41	31.7	26.9
Bourbon-----	16.5	10.50	+1.32	31.2	24.5
Butler-----	15.9	9.54	+1.34	30.6	21.4
Chautauqua-----	15.6	8.57	+1.37	39.4	26.3
Cherokee-----	15.3	7.89	+1.39	33.2	23.0
Cowley-----	17.5	9.96	+1.40	26.3	19.3
Crawford-----	15.2	7.84	+1.39	32.3	19.7
Elk-----	16.4	10.06	+1.33	33.9	22.3
Greenwood-----	17.4	10.70	+1.35	28.8	21.3
Labette-----	15.5	8.12	+1.39	34.0	24.2
Montgomery-----	16.0	8.56	+1.39	37.0	25.6
Neosho-----	16.6	9.12	+1.39	34.4	24.0
Wilson-----	18.2	11.89	+1.33	31.9	23.7
Woodson-----	16.2	9.36	+1.36	36.7	25.9

Note: See text for explanation of statistical terms used.

Table 17.--Oklahoma: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Beaver-----	9.8	7.61	+0.12	64.6	46.7
Cimarron-----	7.1	4.11	+0.16	84.1	52.0
Ellis-----	9.9	8.09	+0.09	46.7	31.4
Harper-----	9.5	6.87	+0.14	60.6	42.5
Texas-----	8.8	6.34	+0.13	74.3	44.5
North-central:					
Alfalfa-----	15.5	11.36	+0.22	35.4	24.6
Garfield-----	15.0	9.78	+0.27	32.4	23.0
Grant-----	14.9	10.04	+0.26	32.4	21.9
Kay-----	16.4	9.33	+0.37	29.9	22.3
Major-----	13.3	9.87	+0.18	38.2	26.7
Noble-----	13.3	6.70	+0.35	32.9	23.0
Woods-----	12.8	8.67	+0.22	40.5	26.7
Woodward-----	9.7	6.76	+0.16	48.4	32.5
Northeast:					
Craig-----	13.6	6.97	+0.35	36.6	30.5
Delaware-----	11.8	4.95	+0.36	44.4	25.3
Mayes-----	11.5	5.97	+0.29	41.9	26.4
Nowata-----	12.9	6.33	+0.35	36.5	26.8
Osage-----	14.6	7.75	+0.36	31.3	22.9
Ottawa-----	14.8	7.68	+0.38	34.2	27.9
Pawnee-----	13.8	7.45	+0.33	32.1	26.1
Rogers-----	11.9	6.13	+0.31	38.2	27.6
Tulsa-----	13.0	7.23	+0.30	40.5	30.0
Wagoner-----	13.5	7.12	+0.34	37.1	29.3
Washington-----	14.0	7.94	+0.32	35.3	25.9
West-central:					
Beckham-----	10.5	8.08	+0.13	48.5	31.5
Blaine-----	14.1	10.85	+0.17	35.2	26.6
Custer-----	13.0	10.35	+0.14	36.3	25.5
Dewey-----	11.6	9.62	+0.10	37.8	25.5
Roger Mills-----	9.3	7.72	+0.08	52.9	32.9
Washita-----	13.2	9.90	+0.17	36.2	24.6
Central:					
Canadian-----	13.8	8.94	+0.26	38.7	26.5
Cleveland-----	12.1	8.55	+0.19	40.1	26.6
Creek-----	7.7	7.99	-0.02	53.8	18.4
Grady-----	13.7	8.18	+0.29	43.5	30.0
Kingfisher-----	13.3	10.22	+0.16	34.6	25.0
Lincoln-----	11.5	9.41	+0.11	38.3	28.3
Logan-----	13.6	8.52	+0.27	35.7	24.9
McClain-----	18.4	10.20	+0.24	36.6	30.7
Okfuskee-----	11.7	10.32	+0.09	36.8	25.6
Oklahoma-----	13.5	8.46	+0.27	38.7	26.5
Payne-----	13.0	8.81	+0.22	31.3	24.7
Pottawatomie-----	14.9	9.64	+0.27	34.1	30.5
Seminole-----	11.6	6.16	+0.28	46.4	37.9
East-central:					
Adair-----	9.6	6.75	+0.14	50.5	22.4
Cherokee-----	9.2	6.55	+0.14	48.1	26.8
Haskell-----	15.4	9.11	+0.33	40.6	44.9
Hughes-----	11.9	8.93	+0.16	35.9	28.8
McIntosh-----	12.2	8.35	+0.20	39.1	33.0
Muskogee-----	14.1	8.99	+0.27	36.2	32.1
Okmulgee-----	10.1	6.92	+0.17	40.6	27.5
Southwest:					
Caddo-----	14.7	10.44	+0.23	34.6	23.5
Comanche-----	10.8	7.68	+0.16	41.5	27.0
Cotton-----	12.0	8.15	+0.20	41.0	28.9
Greer-----	10.8	11.04	-0.01	57.1	28.4
Harmon-----	10.2	8.36	+0.09	61.0	35.6
Jackson-----	12.0	9.27	+0.14	49.8	31.3
Kiowa-----	13.2	11.08	+0.11	41.2	27.3
Tillman-----	14.9	10.64	+0.23	32.3	24.3

Table 17.--Oklahoma: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62--Continued

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
South-central:					
Atoka-----	9.3	8.38	+0.05	55.8	33.9
Bryan-----	13.0	10.00	+1.16	35.8	30.9
Carter-----	10.6	8.86	+0.09	41.8	27.5
Coal-----	10.1	7.77	+1.12	40.8	25.1
Garvin-----	13.7	11.14	+1.14	39.2	30.8
Jefferson-----	10.7	7.67	+1.16	50.9	31.6
Johnston-----	11.3	8.83	+1.13	46.7	29.3
Love-----	11.3	9.80	+0.08	37.6	28.2
Marshall-----	11.4	9.33	+1.11	39.2	28.0
Murray-----	12.8	9.55	+1.17	45.6	29.6
Pontotoc-----	11.5	9.20	+1.12	40.1	25.7
Stephens-----	12.4	8.51	+1.20	39.7	32.5

Note: See text for explanation of statistical terms used.

Table 18.--Texas: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
Northwest:					
Armstrong-----	9.2	8.45	+0.04	67.2	42.6
Bailey-----	9.3	4.01	+1.29	64.0	36.9
Briscoe-----	9.0	6.57	+1.13	60.3	37.8
Carson-----	9.4	8.23	+0.07	67.5	43.4
Castro-----	9.6	2.27	+1.39	74.6	41.3
Childress-----	8.6	6.38	+1.11	59.7	40.2
Cochran 1/------	8.4	4.08	+1.36	74.9	42.0
Collingsworth-----	8.7	5.64	+1.16	52.4	35.9
Cottle-----	8.2	6.93	+0.07	57.7	37.8
Crosby-----	9.8	5.28	+1.25	49.0	33.1
Dallam-----	7.6	5.24	+1.10	83.7	54.5
Deaf Smith-----	8.7	2.77	+1.32	75.7	42.2
Dickens-----	7.0	6.30	+1.04	71.2	38.3
Donley-----	8.4	8.50	-0.01	59.6	36.6
Floyd-----	9.1	3.66	+1.29	53.1	32.8
Gray-----	9.3	8.16	+1.06	69.0	42.5
Hale-----	8.9	.09	+1.48	68.2	33.1
Hall-----	8.9	6.72	+1.15	52.9	41.8
Hansford-----	8.7	6.98	+1.09	75.1	45.2
Hartley-----	6.9	4.40	+1.13	83.0	52.2
Hemphill-----	9.7	8.84	+1.05	54.4	38.8
Hutchinson-----	9.3	8.56	+1.18	58.6	42.8
Kent 2/------	5.9	3.35	+1.20	77.5	47.4
King 2/------	7.1	5.70	+1.11	67.9	43.3
Lamb-----	10.1	3.08	+1.38	60.8	32.9
Lipscomb-----	9.1	7.63	+1.08	61.2	40.4
Lubbock-----	8.2	.71	+1.40	69.6	32.3
Moore-----	7.7	4.90	+1.15	92.4	51.5
Motley 3/------	7.5	5.64	+1.12	59.8	37.3
Ochiltree-----	9.8	8.40	+1.08	69.4	43.9
Oldham-----	7.2	4.75	+1.13	80.2	47.2
Parmer-----	10.1	1.91	+1.44	74.7	44.2
Potter-----	9.1	6.74	+1.13	70.6	43.9
Randall-----	8.5	5.72	+1.15	71.4	40.7
Roberts-----	10.3	10.03	+1.01	65.3	42.1
Sherman-----	8.1	6.17	+1.10	78.6	50.3
Stonewall 2/------	7.1	5.06	+1.17	55.8	32.7
Swisher-----	9.1	3.38	+1.32	69.6	39.6
Wheeler-----	8.0	6.05	+1.11	64.4	38.5

Table 18.--Texas: Trend in average wheat yields and coefficients of variation and negative variation, by counties, 1926-62--Continued

Areas and counties	Weighted average yield	Y- intercept	Regression coefficient	Coefficient of variation about regression line	Coefficient of negative variation below regression line
	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Percent</u>	<u>Percent</u>
North-central:					
Archer-----	9.6	6.71	+0.16	38.3	26.0
Baylor-----	10.6	7.19	+0.18	37.7	25.5
Clay-----	9.8	7.19	+0.14	40.3	27.8
Collin-----	14.0	11.36	+0.14	37.2	28.8
Cooke-----	11.7	7.75	+0.21	43.0	27.1
Denton-----	12.2	9.75	+0.13	41.7	28.2
Fannin-----	13.1	9.35	+0.20	34.6	32.2
Foard-----	10.8	9.11	+0.09	37.9	26.0
Grayson-----	12.2	8.52	+0.20	37.7	28.2
Hardeman-----	9.9	7.66	+0.12	49.7	33.3
Haskell-----	9.7	8.60	+0.06	48.5	36.1
Jack-----	8.7	8.31	+0.02	47.9	30.5
Knox-----	11.1	9.39	+0.10	34.0	24.4
Montague-----	9.6	7.05	+0.12	42.8	30.1
Throckmorton-----	10.3	9.15	+0.06	47.2	33.0
Wichita-----	10.6	6.78	+0.21	37.2	28.5
Wilbarger-----	12.5	8.45	+0.22	33.0	26.6
Wise-----	10.5	7.73	+0.15	44.3	29.2
Young-----	9.8	7.74	+0.11	44.0	30.7
Central:					
Bell-----	10.3	9.24	+0.06	30.1	19.9
Bosque-----	10.3	8.90	+0.08	42.7	29.2
Brown-----	8.5	9.40	-0.05	51.0	33.4
Burnet 4/-----	8.7	8.87	-0.01	47.0	32.2
Callahan-----	8.2	8.80	-0.03	52.2	31.4
Coleman-----	8.3	9.46	-0.07	59.7	35.2
Comanche-----	8.6	9.43	-0.05	50.7	33.7
Concho-----	7.8	8.62	-0.04	68.4	37.9
Coryell-----	10.3	9.42	+0.05	34.9	25.5
Dallas-----	12.9	10.25	+0.14	35.6	24.4
Eastland-----	8.5	9.27	-0.04	46.7	30.8
Ellis-----	11.9	9.04	+0.15	33.6	24.8
Erath 5/-----	8.3	10.77	-0.16	43.8	29.4
Fisher 3/-----	6.7	4.44	+0.14	64.8	43.0
Gillespie-----	10.1	8.26	+0.10	40.9	28.0
Hamilton-----	9.7	9.37	+0.02	36.5	26.0
Hill-----	11.5	9.21	+0.12	35.1	30.7
Johnson-----	11.5	9.45	+0.11	33.6	23.9
Jones-----	7.9	6.26	+0.09	57.6	38.6
Kendall-----	8.3	6.57	+0.09	45.0	27.6
Kerr 6/-----	8.3	6.53	+0.10	42.2	28.4
Lampasas-----	9.6	8.98	+0.04	44.9	31.6
McCulloch-----	8.0	8.92	-0.05	67.2	36.7
Mills-----	8.7	9.03	-0.02	50.0	35.8
Mitchell-----	5.1	3.82	+0.10	91.5	46.0
Nolan 3/-----	6.8	5.43	+0.09	62.5	41.1
Palo Pinto-----	8.4	8.37	<u>1</u> /+0.00	43.9	29.7
Runnels-----	7.5	8.68	-0.06	58.3	31.1
San Saba-----	9.5	9.25	+0.01	49.5	35.3
Scurry-----	5.8	5.35	+0.02	83.2	39.9
Shackelford-----	8.4	7.89	+0.03	53.2	34.2
Stephens-----	7.9	7.21	+0.04	48.4	33.6
Tarrant-----	11.0	8.32	+0.14	41.4	24.2
Taylor-----	6.7	7.13	-0.02	66.4	31.8
Tom Green 8/-----	7.4	6.74	+0.04	61.8	37.2

1/ 1927-39 data omitted.

2/ 1927-38 data omitted.

3/ 1927-32 data omitted.

4/ 1961-62 data omitted.

5/ 1958-62 data omitted.

6/ 1957 data omitted.

7/ 0.003 bushel.

8/ 1955-57 data omitted.

Note: See text for explanation of statistical terms used.

